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I. INTRODUCTION

1. My name is J. Gary Eden. I am over 18 years of age, and I am competent to testify as to the matters set forth herein if I am called upon to do so at a trial, hearing, or deposition.

2. I am an electrical engineer and professor at the University of Illinois. I submit this report at the request of counsel for Defendant Menard, Inc. (“Menard”), and the Third-Party Defendants (Luminex International Company, Ltd.; Richpower Industries, Inc.; Alert Reel Manufacturing, LLC; Best Lighting Products, Inc.; CL Corporation d/b/a Pinegreen Lighting; Good Earth Lighting, Inc.; GT Industrial Products, L.L.C.; Zone Industry Corporation; Canarm, Ltd.; and Test-Rite Products Corp.) (collectively, “Defendants”) to offer my opinions concerning the alleged infringement of U.S. Patent Nos. 10,299,336 (the “’336 Patent”) and 7,658,506 (the “’506 Patent”) which are asserted by Signify North America Corp. and Signify Holding B.V. (collectively, “Signify”) in the above captioned case.

3. I understand that Signify alleges that certain products sold by Menard (and supplied by the Third-Party Defendants) infringe claims 1, 3-5, 7, 9, 11-13, 15, 16, and/or 19 of the ’336 Patent and/or claims 1-5, 7, 14, and/or 15 of the ’506 Patent (collectively, “the Asserted Claims”). These products, hereinafter referred to as the “Accused Products,” are set forth in Appendix 1 to this report. I have been asked to provide my opinions concerning whether these Accused Products infringe the Asserted Claims of the ’336 and ’506 Patents.

4. I am being compensated at a rate of \$800 per hour for time spent on this matter. My compensation is in no way dependent on the opinions I reach or the outcome of this case.

5. My qualifications were set forth in my opening expert report regarding invalidity of the ’336 and ’506 Patents, executed on April 29, 2024 (my “Opening Report” or the “Eden Opening Report”). A copy of my CV is attached to my Opening Report as Appendix A.

6. I understand that Signify retained an expert, Dr. Michael Krames, who submitted a report containing his opinions alleging infringement of the '336 and '506 Patents by the Accused Products executed April 29, 2024 ("hereinafter, "Krames Report"). This report provides my opinions to date regarding issues of infringement with respect to the '336 and '506 Patents, including my opinions rebutting those of Dr. Krames. I reserve the right to supplement or amend this report to address any issues raised by Signify or its experts or resulting from further rulings of the Court or from further discovery. While Dr. Krames further submitted opinions with regards to alleged infringement of U.S. Patent No. 7,348,604 ("the '604 Patent"), I understand that Defendants have retained another technical expert who will respond to Dr. Krames and offer opinions regarding alleged infringement of the '604 Patent.

7. In arriving at my opinions provided in this report, I have considered several different sources of information that are identified in attached Appendix 2 or referenced in my report, including, for example, the Asserted Patents, discovery responses, and documents produced in this litigation.

8. My opinions are based upon this review, my education and experience, my understanding of basic science, principles and practices in the relevant field, and the perspective of a person of ordinary skill in the art ("POSA") at the time of the claimed invention.

9. I am prepared to use all the above-referenced materials, other materials that may be produced during this proceeding, supplemental information I may receive after submitting this report, and other demonstratives and representations based on those materials to support my future testimony, including testimony at trial. I also may rely on any materials on which Signify or its experts rely in expert reports or otherwise.

II. SUMMARY OF OPINIONS

10. During my investigation, I have evaluated the Asserted Claims of the '336 and '506 Patents and found that the Accused Products do not infringe these claims for several reasons. Below, I explain my analysis and point to specific evidence supporting my conclusions. As both fact and expert discovery have yet to be completed, I reserve the right to supplement these findings should new information be made available.

A. '336 Patent

11. After thorough review of the '336 Patent, the Accused Products, and other relevant materials, I find that the Accused Products do not infringe the Asserted Claims of the '336 Patent, as the Accused Products do not practice each and every element of such claims. In particular, the Accused Products do not practice at least elements 1[c] and 1[d] of claim 1 of the '336 Patent. The Accused Products further do not practice dependent claims 3-5, 7, 9, 11, and 12 at least for their dependence upon claim 1. Further, the Accused Products do not practice at least 13[p], 13[b], and 13[c] of claim 13 of the '336 Patent. The Accused Products further do not practice dependent claims 15, 16, and 19 at least for their dependence upon claim 13.

B. '506 Patent

12. After thorough review of the '506 Patent, and the Accused Products, and other relevant materials, I find that the Accused Products do not infringe the Asserted Claims of the '506 Patent, as the Accused Products do not practice each and every element of such claims. In particular, the Accused Products do not practice at least elements 1[a] and 1[b] of the '506 Patent. The Accused Products further do not practice dependent claims 2-5, 7, and 14, at least for their dependence upon claim 1. Further, the Accused products do not practice at least elements 15[b] and 15[d] of the '506 Patent.

C. Menard's Acts of Infringement

13. After reviewing Dr. Krames's analysis concerning Menard's direct and indirect infringement of the '336 and '506 Patents based on what he characterizes as "Menard's exemplary acts of infringement." As discussed herein, Menard (and the Third Party Defendants) do not infringe any valid and enforceable claim of the '336 Patent or '506 Patent.

III. LEGAL PRINCIPLES APPLIED

14. I am an engineer by training and profession. The opinions I am expressing in this report involve the application of my scientific knowledge and experience. In expressing my opinions in this report, I am relying upon certain legal principles that Defendants' counsel has explained to me. I will not offer opinions of the law, as I am not an attorney. However, I am informed of, and understand, several principles concerning patent infringement which I have used for my analysis and to arrive at my conclusions.

A. Claim Construction

15. I understand that a patent's claims define the scope of the alleged invention.

16. I understand that claim construction is a legal issue to be decided by the Court. I further understand that this Court does not hold a formal claim construction process, but instead construes claims on an as-needed basis based upon those issues which they affect. It is thus my understanding that no claim terms have yet been construed in this case, but the parties have instead offered differing constructions on the following terms:

Disputed Term	Patent No.	Defendants' Proposed Construction	Plaintiffs' Proposed Construction
"at least one electrical component"	'336 Patent	Indefinite	Plain and ordinary meaning
"each position of the plurality positions of the switch corresponds to a discrete correlated color"	'336 Patent	Indefinite	Plain and ordinary meaning

Disputed Term	Patent No.	Defendants' Proposed Construction	Plaintiffs' Proposed Construction
temperature (CCT) output by one or more light sources"			
"wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire"	'336 Patent	An electrical connection terminal, at a location that is remote from the luminaire housing, for connecting to an electrical cable	Plain and ordinary meaning
"an electrical cable"	'336 Patent	An insulated wire or wires wrapped in a protective casing, jacket or sheathing	Plain and ordinary meaning
"gap defined by the architectural surface/gap in an architectural surface"	'506 Patent	Gap defined only by the architectural surface	Plain and ordinary meaning
"at least a portion"	'506 Patent	Indefinite	Plain and ordinary meaning

17. In my Opening Report, I offered my opinions as to those claim terms which required construction. (Eden Opening Report, at ¶¶ 24-26.) I understand that Dr. Krames offered his opinions as to which claim terms of the '336 and '506 Patents required construction in order for him to evaluate infringement of the Accused Products. (Krames Report, at ¶¶ 191-256.) As shown in the chart above, six of these terms are the same terms for which I proposed constructions in my Opening Report (four terms for the '336 Patent and two terms for the '506 Patent). Dr. Krames offers proposed constructions for an additional five terms for the '506 Patent. For each of these terms, I understand that Dr. Krames proposes the claim term should be construed to have its plain and ordinary meaning as would be understood by a POSA. I agree that each of these terms for the '506 Patent would be readily understood by a POSA in the context of the '506 Patent, and thus apply such a plain and ordinary meaning when evaluating the Accused Products against the Asserted Claims of the '506 Patent.

18. For the six terms for which Dr. Krames and I offer differing constructions, it is my opinion that such constructions do not materially affect any analysis of potential infringement by the Accused Products. In my further analysis below, I have applied the parties' proposed respective constructions where applicable. I also disagree with Dr. Krames's interpretation of the "plain and ordinary meaning" of certain claim terms as discussed below. In my opinion, the Accused Products do not infringe the Asserted Claims of the '336 and '506 Patents under either parties' proposed constructions for each disputed term, as further analyzed below.

B. Level Of Skill In The Art

19. I set forth my opinions regarding the level of ordinary skill in the art in my opening report regarding invalidity of the '336 and '506 Patents executed on April 29, 2024. *See* Eden Opening Report, at Section III.A. Having reviewed the Krames Report and the opinions contained therein, I maintain the opinions set forth in my Opening Report. It is my opinion that a person of ordinary skill in the art of the '336 and '506 Patents would have had a bachelor's degree in mechanical engineering, electrical engineering, or physics with at least three years of experience working in LEDs and lighting design; a master's degree in one of the above disciplines with at least two years of experience working in LEDs and lighting design; or other equivalent experience.

C. Patent Claims

20. I understand that a patent includes claims that define the boundaries of the patent. I understand that the claims set forth requirements of the invention which are known as "limitations" or "elements."

21. I understand that a patent may include two types of claims: independent claims and dependent claims. I understand that independent claims stand alone, and dependent claims refer to or incorporate one or more other claims and incorporate all limitations in the referenced claim

or claims. I further understand that dependent claims must contain a reference to a claim previously set forth and then further specify a limitation of the subject matter claimed.

22. I understand that the first step in evaluating potential infringement of a patent claim is to interpret or construe the meaning of the claim. I understand that claim terms presumptively are given their ordinary and customary meaning within the context of the patent in which the terms are used, *i.e.*, the meaning that the term would have to a POSA at the time of the alleged invention in light of what the patent teaches.

23. I understand that claim construction is a matter of law for the judge to decide.

24. I am also familiar with Signify's infringement assertions. I understand that claim scope must be interpreted in the same way for both infringement and invalidity purposes. Accordingly, in some instances, my analysis may apply the apparent or equivalent claim scope that Signify asserts in an attempt to make its infringement case. However, my use of Signify's views about claim scope does not mean that I agree with Signify's assertions about claim scope or infringement.

D. Burden of Proving Infringement

25. I understand that Signify, as the party asserting infringement, bears the burden of proving infringement by Defendants by a preponderance of the evidence, and not speculation ungrounded in the evidence.

26. I understand that an accused infringer is liable for direct infringement of a patent if the party asserting infringement proves that the alleged infringer has made, used, offered for sale, imported, or sold in the United States the invention as defined by at least one of the asserted claims in an asserted patent.

27. I understand that the infringement analysis is a two-step process. First, an asserted claim must be properly construed to determine its scope and meaning. Second, the asserted claim, as properly construed, is then compared to the accused product or process on a limitation-by-limitation basis.

28. I understand there are two ways in which a patent claim can be directly infringed. A claim can be literally infringed, or a claim can be infringed under the doctrine of equivalents.

29. I understand that a dependent claim incorporates all of the elements of the claim to which the dependent claim refers (including any intervening claims), as well as the elements recited in the dependent claim itself. I understand that, if an independent claim is not infringed, the dependent claim(s) which depend upon that independent claim cannot be infringed.

E. Literal Infringement

30. I understand that, to determine literal infringement, the accused product must be compared with each properly construed asserted claim. I understand that a claim is literally infringed only if the accused product or method includes each and every element in the claim.

31. If the accused product does not contain or include one or more elements recited in a claim, or if the accused infringer does not perform one or more steps of the claimed method, it is my understanding that the product, or method, does not literally infringe the claim. I understand that literal infringement is determined with respect to each patent claim individually.

F. Doctrine of Equivalents

32. I understand that a product or method may infringe a claim of a patent even if not every element of that claim is present in the accused product or method. However, I understand that to do so there must be an equivalent component or part in the accused product, or step in the

accused method, for each element of the patent claim that is not literally present in the accused product or method. This is called infringement under the doctrine of equivalents.

33. Equivalency is to be assessed at the time of the alleged infringement—*i.e.*, the doctrine of equivalents is not limited to equivalents that were known at the time the patent issued. I also understand that the doctrine of equivalents cannot be used to reach structures and functions criticized or repudiated in a patent specification.

34. I understand that in determining infringement under the doctrine of equivalents, the fact finder must consider whether the substituted element represents a change that a POSA would have considered insubstantial at the time of the infringement. I understand that this is also referred to as the “insubstantial differences” test. In determining whether one or more components of the accused product or method are equivalent to an element of the claimed invention, I understand that I should consider whether, at the time of the alleged infringement, persons reasonably skilled in the art would have known of the interchangeability of that component or those components with the element claimed in the patent claim. I also understand that a difference can be considered insubstantial when a POSA would consider that a component or part of the accused product, or accused step of the accused method, performs substantially the same function, in substantially the same way, to produce substantially the same result compared to the corresponding element of the claim. I understand this is also referred to as the “function/way/result” test.

35. I understand that, under the doctrine of equivalents, exact identity of function, way, and result is not required; substantial identity is sufficient. However, I understand that the doctrine of equivalents cannot be used to effectively eliminate (or “vitate”) the requirement for a particular claim element—for example, the opposite of a claim limitation cannot be equivalent to that limitation.

36. I further understand that there are several other limitations to the applicability of the doctrine of equivalents. *First*, the range of equivalents cannot be so broad as to encompass that which was already known in the prior art. To determine the scope of the doctrine of equivalents in light of the prior art, a hypothetical claim that literally recites the range of equivalents asserted to infringe may be considered. If the prior art would render the hypothetical claim anticipated or obvious, then the doctrine of equivalents cannot be used to cover the range of equivalents asserted to infringe.

37. *Second*, a patent holder may not claim as an equivalent any subject matter that the patentee disclosed but did not claim. Disclosure in the specification is sufficient to invoke this limitation. For this limitation to apply, a disclosure must be of such specificity that one of ordinary skill in the art could identify the subject matter that had been disclosed and not claimed.

38. *Third*, a patent holder may not reclaim as an equivalent any subject matter that the patentee relinquished during prosecution (referred to as “prosecution history estoppel”), based on any statement or amendment during prosecution for any reason relating to patentability. If a patentee narrows a claim limitation by amendment or argument during prosecution for reasons pertaining to patentability, the patentee is not entitled to reclaim subject matter that was covered by the broader claim unless one of the following exceptions applies: (i) the equivalent was unforeseeable at the time of the application; (ii) the rationale underlying the amendment bears no more than a tangential relation to the equivalent; or (iii) the patentee could not reasonably have been expected to have described the equivalent in question.

IV. PERSON OF ORDINARY SKILL IN THE ART

39. I set forth my opinions regarding a person of ordinary skill in the art in my Opening Report: a POSA for the '336 and '506 Patents would have a bachelor's degree in mechanical

engineering, electrical engineering, or physics with at least three years of experience working in LEDs and lighting design; a master's degree in one of the above disciplines with at least two years of experience working with LEDs and lighting design, or other equivalent experience. (Eden Opening Report, at ¶¶ 19-22.) I understand that Dr. Krames disagrees with this level of ordinary skill in the art, opining that a POSA would instead have a “[b]achelor’s degree in mechanical engineering, electrical engineering, or a related field (or its equivalent), and had at least two years of experience in the design or development of LED lighting devices and/or LED luminaires.” (Krames Report, at ¶ 54.) While I disagree with Dr. Krames’s definition of a POSA for the subject matter of the ’336 and ’506 Patents, it is my opinion that I still more than qualify as a POSA for the subject matter of the ’336 and ’506 Patents under Dr. Krames’s less stringent definition. Regardless, applying either my or Dr. Krames’s definition of a POSA, my analysis regarding whether the Accused Products infringe the Asserted Claims remains the same: the Accused Products do not infringe the Asserted Claims of the ’336 and ’506 Patents.

V. THE ACCUSED PRODUCTS

40. I understand that Signify has accused a series of Menard-branded LED lighting products of infringing the ’336 and ’506 Patents. Dr. Krames identified these Accused Products in his Appendix A, which lists: (i) the Menard SKU; (ii) a brief product description; (iii) the identified third-party supplier; (iv) those claims asserted against the particular product; and (v) the claim chart corresponding to the product. Dr. Krames’s Appendices C and D contain charts addressing his infringement theories for certain “representative” products accused of infringing the ’336 and ’506 Patents. I will address Dr. Krames “representativeness” theories in greater detail below.

41. Based upon Dr. Krames's Appendix A, I understand that Signify alleges infringement of the following Menard-branded LED lighting products, as identified by their SKU, as set forth below:

Patent	Menard SKUs	Supplier
'336	346-0635, 346-0636, 346-0637, 346-0638, 346-0639, 346-0640, 346-0874, 346-0875, 346-0877, 346-0880, 346-0881, 346-0882, 346-0884, 346-0885, 346-0886, 346-7211, 349-1274, 349-1279, 349-1352, 349-1359, 349-1385, 349-1386, 349-1388, 349-1391, 349-1392, 349-1393, 349-1394, 349-1395, 349-1396, 349-2100, 349-2101, 349-2102	American Lighting
'336	348-2106, 348-2107, 348-2168, 348-2169, 348-2170	Best Lighting
'336	349-1294, 349-2202, 349-2203	Bulb Star
'336	346-7258, 346-7259, 346-7260, 346-7261, 346-7262	CL Corp.
'336	349-1292	East West
'336	351-1510, 351-1511	Good Earth
'336	348-2224, 348-2225, 348-2226, 351-0001, 351-0002, 351-0013, 351-0018	GT Industrial ¹
'336	348-2120, 348-2127, 348-2182, 349-1202, 349-1203, 349-1342, 349-1343, 349-1348, 349-2134, 349-2135, 351-0008	Luminex
'336	346-2222, 346-2223, 346-2224, 346-7203, 346-7204, 346-7205, 348-2130, 348-2131, 356-9473	Zone Industry
'506	349-1201, 349-1204, 349-1206, 349-1207, 349-1279, 349-1345, 349-1346, 349-1347, 349-1353, 349-1354, 349-1391, 349-1392, 349-1393, 349-1394, 349-2101, 349-2102	American Lighting
'506	349-1280, 349-1281, 349-1294, 349-2200, 349-2201	Bulb Star
'506	349-1213, 349-1214, 349-1215, 349-1216	Canarm
'506	349-1292	East West
'506	349-1202, 349-1203	Luminex

42. Dr. Krames discusses his review of these accused product SKUs and comparison thereof to those products analyzed in Signify's infringement contentions, concluding that "the Accused Products analyzed in Signify's Infringement Contentions and in [his] report are the same products that are or have been offered for sale by Menard. . . ." (Krames Report, at ¶ 109.) I have

¹ Dr. Krames's Appendix A erroneously identified Best Lighting as the "Identified Supplier" of Menard SKU nos. 348-2224, 348-2225, and 348-2226.

not reviewed any evidence that would suggest otherwise. Unless otherwise stated herein, to the extent a product is identified by a Menard SKU, I assume that any information analyzed regarding that product (*e.g.*, images, product specifications, etc.) correspond to that accused product SKU.

VI. REPRESENTATIVENESS OF ACCUSED PRODUCTS

43. I understand that in order to show infringement of an accused product, the product must be shown to meet every limitation of an asserted claim. Dr. Krames chose not to analyze each of the Accused Products on a limitation-by-limitation basis in an attempt to demonstrate infringement. Instead, Dr. Krames identified what he refers to as “representative Accused Products” and only analyzed this smaller subset of products on a limitation-by-limitation basis. (Krames Report, at ¶¶ 113-115.) According to Dr. Krames, he was permitted to perform such a limited analysis because “the primary representative Accused Products and all represented products in each appendix . . . share the same, or substantially the same, infringing qualities, features and/or operation and are representative of one another for purposes of the infringement analysis. . . .” (Krames Report, at ¶ 115.) Thus, for each grouping of Asserted Claims, Dr. Krames identified a single (“primary”) representative product. He then identified additional “exemplary” representative products in an attempt to show that the single “primary” representative product was further representative of the entire grouping of Accused Products. Dr. Krames’s product grouping for representative purposes is summarized in the following table:

Asserted Claims	Primary Representative Product	Exemplary Representative Products	Remaining Accused Products
'336: 1, 3, 7, 9, 11-13, 15, 19	349-1292	348-2107, 349-1202	348-2106, 349-1203
'336: 1, 3-5, 7, 9, 11-13, 15, 16, 19	349-1348	349-1294, 349-1391	349-1352, 349-1392, 349-1393, 349-1394
'336: 13, 15	346-0639	346-7211, 349-1396, 346-7203, 348-2130, 356-9473, 348-2182, 351-0008, 348-2127, 348-2169	346-0635, 346-0636, 346-0637, 346-0638, 346-0640, 346-0874, 346-0875, 346-0877, 346-0880, 346-0881, 346-0882, 346-0884, 346-0885, 346-0886, 349-1279, 349-1359, 349-2100, 348-2168, 348-2170, 351-1510, 351-1511, 348-2120, 346-2222, 346-2223, 346-2224, 346-7204, 346-7205, 348-2131
'336: 13, 15, 16	346-7258	348-2226, 349-1342, 349-1385, 349-2202, 351-0001	349-1274, 349-1386, 349-1387, 349-1388, 348-2224, 348-2225, 346-7259, 346-7260, 346-7261, 346-7262, 351-0002, 351-0013, 351-0018, 349-1343
'336: 1, 3-5, 9, 11-13, 15, 16, 19	349-2101	349-2134, 349-2203	349-1395, 349-2102, 349-2135
'506: 1-5, 7, 14, 15	349-1353	349-1204, 349-1213, 349-2200	349-1201, 349-1206, 349-1207, 349-1279, 349-1345, 349-1346, 349-1347, 349-1354, 349-1391, 349-1392, 349-1393, 349-1394, 349-2201, 349-1214, 349-1216
'506: 1-4, 7, 14	349-1292	349-1202, 349-1215, 349-1294, 349-2101	349-2102, 349-1280, 349-1281, 349-1203

44. I disagree with Dr. Krames's conclusion that only a small subset of the Accused Products can be analyzed in detail in order to establish infringement of all such Accused Products based on a "representativeness" theory. It is my opinion that Dr. Krames failed to show that the Accused Products he chose not to analyze on a limitation-by-limitation basis "share the same or substantially the same, infringing qualities, features and/or operation" as those products that he identified as "representative." Dr. Krames makes repeated references to the apparent "evidence"

establishing such representativeness in his report. (*See* Krames Report, at ¶¶ 113-115.) Having reviewed Dr. Krames’s report, I did not find any such evidence, but instead only general conclusions as to why such products are representative. The only instances where Dr. Krames appears to analyze any potential “evidence” in an attempt to justify his representativeness conclusions are in the individual appendices attached to his report. Accordingly, I have reviewed those appendices and will respond to each of the representativeness arguments in turn below.

A. SKU 349-1292 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix D-1

45. In Appendix D-1 to his report, Dr. Krames purports to analyze evidence that, in his opinion, establishes SKU 349-1292 as representative of the following SKUs for purposes of establishing infringement of claims 1, 3, 7, 9, 11-13, 15, and 19 of the ’336 Patent: 348-2107, 348-2106, 349-1202, and 349-1203. Dr. Krames’s justification for relying on such a representativeness theory is that all of these SKUs apparently “contain the same, or substantially [the] same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product.” (Krames Report, Appendix D-1, at 1.) But Dr. Krames’s analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims, and therefore fails to establish SKU 349-1292 as representative of any additional Accused Products.

46. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix D-1, at 2.) According to Dr. Krames, the only relevant features of the particular product SKUs relevant to an infringement analysis are: (i) the housing; (ii) the electrical component; (iii) an electrical cable; and (iv) a switch. (*Id.*) Yet despite identifying these four relevant features for purposes of

analyzing infringement, Dr. Krames analyzed *only one of them* in his attempt to establish representativeness of SKU 349-1292: the switch. (Krames Report, Appendix D-1, at 5-22.) For the remaining three “relevant features” according to Dr. Krames, he provides only a single image of the accused product, with no analysis or identification of these features. (Krames Report, Appendix D-1, at 23-24.) And even Dr. Krames’s analysis of the switch for purposes of representativeness was limited to only what he deemed the “exemplary” representative Accused Products, or SKUs 348-2107 and 349-1202. There is no analysis in Dr. Krames’s Report or Appendix D-1 that demonstrates the presence of (i) the housing; (ii) the electrical component; or (iii) an electrical cable *for any* of the remaining accused product SKUs identified in Appendix D-1, let alone that to the extent such features are present in these accused product SKUs, any differences between such features as compared to the identified representative product SKU 349-1292 are “immaterial” for purposes of establishing infringement.

47. It is therefore my opinion that Dr. Krames has failed to establish product SKU 349-1292 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 349-1292 are “immaterial” when evaluating infringement: 348-2107, 348-2106, 349-1202, and 349-1203.

B. SKU 349-1348 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix D-2

48. In Appendix D-2² to his report, Dr. Krames purports to analyze evidence that, in

² While the attached appendices to Dr. Krames’s report are largely repetitive and virtually identical for each accused patent, I will address each separately for completeness.

his opinion, establishes SKU 349-1348³ as representative of the following SKUs for purposes of establishing infringement of claims 1, 3-5, 7, 9, 11-13, 15, 16, and 19 of the '336 Patent: 349-1294, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394. Dr. Krames's justification for relying on such a representativeness theory is that all of these SKUs apparently "contain the same, or substantially [the] same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product." (Krames Report, Appendix, D-2 at 1.) But Dr. Krames's analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims, and therefore fails to establish SKU 349-1348 as representative of any additional Accused Products.

49. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix D-2, at 2.) According to Dr. Krames, the only features of the particular product SKUs relevant to an infringement analysis are: (i) the housing; (ii) the electrical component; (iii) an electrical cable; and (iv) a switch. (*Id.*) Yet despite identifying these four relevant features for purposes of analyzing infringement, Dr. Krames analyzed *only one of them* in his attempt to establish representativeness of SKU 349-1348: the switch. (Krames Report, Appendix D-2, at 5-16.) For the remaining three "relevant features" according to Dr. Krames, he provides only a single image

³ I understand that Dr. Krames and Signify contend SKU 348-1348 to be the primary representative product in Appendix D-2, despite numerous references alternating between this SKU and SKU 349-1292 throughout the appendix. I assume the references to SKU 349-1292 were in error and inadvertently propagated throughout the appendix when transferring similar material from Appendix D-1 to the subsequent appendices, and therefore ignored such references to SKU 349-1292 throughout Appendix D-2. To the extent Dr. Krames intended to opine as to the representativeness of SKU 349-1292 in Appendix D-2 either in place of, or in addition to, SKU 348-1348, I reserve the right to respond accordingly.

of the accused product, with no analysis or identification of these features. (Krames Report, Appendix D-2, at 17-18.) And even Dr. Krames's analysis of the switch for purposes of representativeness was limited to only what he deemed the "exemplary" representative Accused Products, or SKUs 349-1294 and 349-1391. There is no analysis in Dr. Krames's Report or Appendix D-2 that demonstrates the presence of (i) the housing; (ii) the electrical component; or (iii) an electrical cable *for any* of the remaining accused product SKUs identified in Appendix D-2, let alone that to the extent such features are present in these accused product SKUs, any differences between such features as compared to the identified representative product SKU 349-1348 are "immaterial" for purposes of establishing infringement.

50. It is therefore my opinion that Dr. Krames has failed to establish product SKU 349-1348 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 349-1348 are "immaterial" when evaluating infringement: 349-1294, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394.

C. SKU 346-0639 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix D-3

51. In Appendix D-3 to his report, Dr. Krames purports to analyze evidence that, in his opinion, establishes SKU 346-0639 as representative of the following SKUs for purposes of establishing infringement of claims 13 and 15 of the '336 Patent: 346-0635, 346-0636, 346-0637, 346-0638, 346-0640, 346-0874, 346-0875, 346-0877, 346-0880, 346-0881, 346-0882, 346-0884, 346-0885, 346-0886, 346-2222, 346-2223, 346-2224, 346-7203, 346-7204, 346-7205, 346-7211, 348-2120, 348-2127, 348-2130, 348-2131, 348-2168, 348-2169, 348-2170, 348-2182, 349-1279, 349-1359, 349-1396, 349-2100, 351-0008, 351-1510, 351-1511, and 356-9473. Dr. Krames's

justification for relying on such a representativeness theory is that all of these SKUs apparently “contain the same, or substantially the same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product.” (Krames Report, Appendix D-3, at 2.) But Dr. Krames’s analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims, and therefore fails to establish SKU 346-0639 as representative of any additional Accused Products.

52. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix D-3, at 5-6.) According to Dr. Krames, the only relevant features of the particular product SKUs relevant to an infringement analysis are: (i) a body; (ii) coupling features; and (iii) an actuator having a range of positions corresponding to a CCT. (*Id.*) Yet despite identifying these three relevant features for purposes of analyzing infringement, Dr. Krames analyzed ***only one of them*** in his attempt to establish representativeness of SKU 346-0639: the actuator. (Krames Report, Appendix D-3, at 13-48.) For the remaining two “relevant features” according to Dr. Krames, he provides only a single image of the accused product, with no analysis or identification of these features. (Krames Report, Appendix D-3, at 48-54.) And even Dr. Krames’s analysis of the actuator for purposes of representativeness was limited to only what he deemed the “exemplary” representative Accused Products, or SKUs 346-7211, 349-1396, 346-7203, 348-2130, 356-9473, 348-2182, 351-0008, 348-2127, and 348-2169. There is no analysis in Dr. Krames’s Report or Appendix D-3 that demonstrates the presence of (i) a body; or (ii) coupling features ***for any*** of the remaining accused product SKUs identified in Appendix D-3, let alone that to the extent such features are present in

these accused product SKUs, any differences between such features as compared to the identified representative product SKU 346-0639 are “immaterial” for purposes of establishing infringement.

53. It is therefore my opinion that Dr. Krames has failed to establish product SKU 346-0639 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 346-0639 are “immaterial” when evaluating infringement: 346-0635, 346-0636, 346-0637, 346-0638, 346-0640, 346-0874, 346-0875, 346-0877, 346-0880, 346-0881, 346-0882, 346-0884, 346-0885, 346-0886, 346-2222, 346-2223, 346-2224, 346-7203, 346-7204, 346-7205, 346-7211, 348-2120, 348-2127, 348-2130, 348-2131, 348-2168, 348-2169, 348-2170, 348-2182, 349-1279, 349-1359, 349-1396, 349-2100, 351-0008, 351-1510, 351-1511, and 356-9473.

D. SKU 346-7258 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix D-4

54. In Appendix D-4 to his report, Dr. Krames purports to analyze evidence that, in his opinion, establishes SKU 346-7258 as representative of the following SKUs for purposes of establishing infringement of claims 13, 15, and 16 of the '336 Patent: 346-7259, 346-7260, 346-7261, 346-7262, 348-2224, 348-2225, 348-2226, 349-1274, 349-1342, 349-1343, 349-1385, 349-1386, 349-1387, 349-1388, 349-2202, 351-0001, 351-0002, 351-0013, and 351-0018. Dr. Krames's justification for relying on such a representativeness theory is that all of these SKUs apparently “contain the same, or substantially [the] same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product.” (Krames Report, Appendix D-4, at 1.) But Dr. Krames's analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims,

and therefore fails to establish SKU 346-7258 as representative of any additional Accused Products.

55. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix D-4, at 3.) According to Dr. Krames, the only relevant features of the particular product SKUs relevant to an infringement analysis are: (i) a body; (ii) coupling features; and (iii) an actuator having a range of positions corresponding to a CCT. (Krames Report, Appendix D-4, at 4.) Yet despite identifying these three relevant features for purposes of analyzing infringement, Dr. Krames analyzed *only one of them* in his attempt to establish representativeness of SKU 346-7258: the actuator. (Krames Report, Appendix D-4, at 8-27.) For the remaining two “relevant features” according to Dr. Krames, he provides only a single image of the accused product, with no analysis or identification of these features. (Krames Report, Appendix D-4, at 28-32.) And even Dr. Krames’s analysis of the actuator for purposes of representativeness was limited to only what he deemed the “exemplary” representative Accused Products, or SKUs 348-2226, 349-1342, 349-1385, 349-2202, and 351-0001. There is no analysis in Dr. Krames’s Report or Appendix D-4 that demonstrates the presence of (i) a body; or (ii) coupling features *for any* of the remaining accused product SKUs identified in Appendix D-3, let alone that to the extent such features are present in these Accused Product SKUs, any differences between such features as compared to the identified representative product SKU 346-7258 are “immaterial” for purposes of establishing infringement.

56. It is therefore my opinion that Dr. Krames has failed to establish product SKU 346-7258 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to

establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 346-7258 are “immaterial” when evaluating infringement: 346-7259, 346-7260, 346-7261, 346-7262, 348-2224, 348-2225, 348-2226, 349-1274, 349-1342, 349-1343, 349-1385, 349-1386, 349-1387, 349-1388, 349-2202, 351-0001, 351-0002, 351-0013, and 351-0018.

E. SKU 349-2101 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix D-5

57. In Appendix D-5 to his report, Dr. Krames purports to analyze evidence that, in his opinion, establishes SKU 349-2101 as representative of the following SKUs for purposes of establishing infringement of claims 1, 3-5, 9, 11-13, 15, 16, and 19 of the '336 Patent: 349-1395, 349-2102, 349-2134, 349-2135, and 349-2203. Dr. Krames's justification for relying on such a representativeness theory is that all of these SKUs apparently “contain the same, or substantially [the] same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product.” (Krames Report, Appendix D-5, at 1.) But Dr. Krames's analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims, and therefore fails to establish SKU 349-2101 as representative of any additional Accused Products.

58. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix D-5, at 2.) According to Dr. Krames, the only relevant features of the particular product SKUs relevant to an infringement analysis are: (i) the housing; (ii) the electrical component; (iii) an electrical cable; and (iv) a switch. (*Id.*) Yet despite identifying these four relevant features for purposes of analyzing infringement, Dr. Krames analyzed *only one of them* in his attempt to establish representativeness of SKU 349-2101: the switch. (Krames Report Appendix D-5 at 5-18.) For

the remaining three “relevant features” according to Dr. Krames, he provides only a single image of the Accused Product, with no analysis or identification of these features. (Krames Report, Appendix D-5, at 19-20.) And even Dr. Krames’s analysis of the switch for purposes of representativeness was limited to only what he deemed the “exemplary” representative Accused Products, or SKUs 349-2134 and 349-2203. There is no analysis in Dr. Krames’s Report or Appendix D-5 that demonstrates the presence of (i) the housing; (ii) the electrical component; or (iii) an electrical cable *for any* of the remaining accused product SKUs identified in Appendix D-5, let alone that to the extent such features are present in these accused product SKUs, any differences between such features as compared to the identified representative product SKU 349-2101 are “immaterial” for purposes of establishing infringement.

59. It is therefore my opinion that Dr. Krames has failed to establish product SKU 349-2101 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 349-2101 are “immaterial” when evaluating infringement: 349-1395, 349-2102, 349-2134, 349-2135, and 349-2203.

F. SKU 349-1353 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix C-1

60. In Appendix C-1 to his report, Dr. Krames purports to analyze evidence that, in his opinion, establishes SKU 349-1353 as representative of the following SKUs for purposes of establishing infringement of claims 1-5, 7, 14, and 15 of the ’506 Patent: 349-1201, 349-1204, 349-1206, 349-1207, 349-1213, 349-1214, 349-1216, 349-1279, 349-1345, 349-1346, 349-1347, 349-1354, 349-1391, 349-1392, 349-1393, 349-1394, 349-2200, and 349-2201. Dr. Krames’s justification for relying on such a representativeness theory is that all of these SKUs apparently

“contain the same, or substantially [the] same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product.” (Krames Report, Appendix C-1, at 1.) But Dr. Krames’s analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims, and therefore fails to establish SKU 349-1353 as representative of any additional Accused Products.

61. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix C-1, at 3.) According to Dr. Krames, the only relevant features of the particular product SKUs relevant to an infringement analysis are: (i) a cove member to fit within a gap of the architectural surface; (ii) a recessed interior surface; (iii) at least one LED for irradiating part of the interior surface with light perceivable by a viewer through a gap in the surface; and (iv) concealing the LED(s) from the viewer. (*Id.*) Yet despite identifying these four relevant features for purposes of analyzing infringement, Dr. Krames never actually analyzes any of these features for purposes of establishing representativeness. Rather, Dr. Krames merely reproduces the claim language, followed by a series of pictures of the products and selected excerpts from their respective user manuals. (Krames Report, Appendix C-1, at 7-27.) Dr. Krames has not annotated these reproduced pictures in any way, or provided any analysis as to how these pictures demonstrate the claimed features, let alone establish how any of these alleged features are thus representative of further products. And for the remaining accused product SKUs, he provides only a single image of the accused product, again with no analysis or identification of any claimed features. (Krames Report, Appendix C-1, at 28-31.) And even Dr. Krames’s attempted demonstration of representativeness only addresses what he deemed the “exemplary” representative Accused Products, or SKUs 349-1204, 349-1213,

and 349-2200. There is no analysis in Dr. Krames's Report or Appendix C-1 that demonstrates the presence of (i) a cove member to fit within a gap of the architectural surface; (ii) a recessed interior surface; (iii) at least one LED for irradiating part of the interior surface with light perceivable by a viewer through a gap in the surface; and (iv) concealing the LED(s) from the viewer *for any* of the remaining accused product SKUs identified in Appendix C-1, let alone that to the extent such features are present in these accused product SKUs, any differences between such features as compared to the identified representative product SKU 349-1353 are "immaterial" for purposes of establishing infringement.

62. It is therefore my opinion that Dr. Krames has failed to establish product SKU 349-1353 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 349-1353 are "immaterial" when evaluating infringement: 349-1201, 349-1204, 349-1206, 349-1207, 349-1213, 349-1214, 349-1216, 349-1279, 349-1345, 349-1346, 349-1347, 349-1354, 349-1391, 349-1392, 349-1393, 349-1394, 349-2200, and 349-2201.

G. SKU 349-1292 is Not Representative of the Remaining Accused Products in Dr. Krames Appendix C-2

63. In Appendix C-2 to his report, Dr. Krames purports to analyze evidence that, in his opinion, establishes SKU 349-1292 as representative of the following SKUs for purposes of establishing infringement of claims 1-4, 7, and 14 of the '506 Patent: 349-1202, 349-1203, 349-1215, 349-1280, 349-1281, 349-1294, 349-2101, and 349-2102. Dr. Krames's justification for relying on such a representativeness theory is that all of these SKUs apparently "contain the same, or substantially [the] same, relevant features for purposes of establishing the presence of each and every claim limitation in each such Accused Product." (Krames Report, Appendix C-2, at 1.) But

Dr. Krames's analysis, in my opinion, fails to actually analyze the relevant features of each of the accused product SKUs in view of the Asserted Claims, and therefore fails to establish SKU 349-1292 as representative of any additional Accused Products.

64. Dr. Krames states that any differences amongst these particular product SKUs relate only to features not recited in the Asserted Claims, such as shape, size, finish, lumen output/total wattage, product numbers, and brand names. (Krames Report, Appendix C-2, at 2.) According to Dr. Krames, the only relevant features of the particular product SKUs relevant to an infringement analysis are: (i) a cove member to fit within a gap of the architectural surface; (ii) a recessed interior surface; (iii) at least one LED for irradiating part of the interior surface with light perceivable by a viewer through a gap in the surface; and (iv) concealing the LED(s) from the viewer. (Krames Report, Appendix C-2, at 3.) Yet despite identifying these four relevant features for purposes of analyzing infringement, Dr. Krames never actually analyzes any of these features for purposes of establishing representativeness. Rather, Dr. Krames merely reproduces the claim language, followed by a series of pictures of the products and selected excerpts from their respective user manuals. (Krames Report Appendix C-2, at 5-26.) Dr. Krames has not annotated these reproduced pictures in any way, or provided any analysis as to how these pictures demonstrate the claimed features, let alone establish how any of these alleged features are thus representative of further products. And for the remaining accused product SKUs, he provides only a single image of the accused product, again with no analysis or identification of any claimed features. (Krames Report, Appendix C-2, at 26-27.) And even Dr. Krames's attempted demonstration of representativeness only addresses what he deemed the "exemplary" representative Accused Products, or SKUs 349-1202, 349-1215, 349-1294, and 349-2101. There is no analysis in Dr. Krames's Report or Appendix C-2 that demonstrates the presence of (i) a cove

member to fit within a gap of the architectural surface; (ii) a recessed interior surface; (iii) at least one LED for irradiating part of the interior surface with light perceivable by a viewer through a gap in the surface; and (iv) concealing the LED(s) from the viewer *for any* of the remaining accused product SKUs identified in Appendix C-2, let alone that to the extent such features are present in these accused product SKUs, any differences between such features as compared to the identified representative product SKU 349-1292 are “immaterial” for purposes of establishing infringement.

65. It is, therefore, my opinion that Dr. Krames has failed to establish product SKU 349-1292 as representative of the following product SKUs for failing to demonstrate the presence of the three features that he himself identified as necessary infringing features, as well as failing to establish that to the extent such features are present in the Accused Products, any differences when compared to SKU 349-1292 are “immaterial” when evaluating infringement: 349-1202, 349-1203, 349-1215, 349-1280, 349-1281, 349-1294, 349-2101, and 349-2102.

VII. THE ASSERTED PATENTS

A. Summary of the '336 Patent and '506 Patent

66. I provided summaries of the '336 and '506 Patents, and summaries of the prosecution histories and technology backgrounds of the '336 and '506 Patents, in Section VI of my Opening Report. I incorporate my previous analysis as if repeated herein in its entirety.

B. The Asserted Claims Of The '336 Patent Have A Priority Date No Earlier Than June 21, 2018

67. I explained in my Opening Report that the Asserted Claims of the '336 Patent have a priority date no earlier than June 21, 2018—*i.e.*, the date the applicant filed the '394 Application. (*See* Eden Opening Report, at Section VIII.A.) I incorporate Section VIII.A of my Opening Report as if repeated herein in its entirety.

68. Dr. Krames offered additional opinions concerning the priority date of claims 13, 15, and 16 of the '336 Patent. (*See* Krames Report, Section VII.D.3.) I provide an additional response to Dr. Krames's arguments below.

69. As an initial matter, claim 13 recites "a switch", not a luminaire. However, the '424 Provisional briefly mentions only conventional manual switches that have been commonplace for decades. As discussed below, the only disclosure of a switch in the '424 Provisional is that of the well-known DIP switch.

70. For the sake of background, the discussion of switches in the '424 Provisional is as follows:

Switches 210 provide an input for configuring the luminaire 100 to operate at a selected correlated color temperature. In the illustrated embodiment, the circuit 200 comprises two manual switches 210. Other embodiments may have fewer or more switches 210. In some embodiments, the switches 210 comprise dual inline pin (DIP) switches. In various embodiments, the switches 210 can be mounted to the housing 105 of the luminaire 100, for example within the housing 105 or on an exterior surface of the housing. In some embodiments, the switches 210 are mounted on the substrate 125.

As further discussed below, a controller 215 operates the light emitting diodes 201, 150, 155 according to state of the switches 210. In some example embodiments, the controller 215 comprises logic implemented in digital circuitry, for example discrete digital components or integrated circuitry. In some example embodiments, the controller 215 utilizes microprocessor-implemented logic with instructions stored in firmware or other static or non-transitory memory.

('424 Provisional at 5:12-24; *see also id.* at 5:25-6:27; Figs. 1D, 1E, 3, 4.)

71. The discussion of switches in the '424 Provisional reproduced above mentions only "manual" switches and DIP switches. DIP switches have been in commercial products for decades and are among the simplest of switches, consisting of a set of "on-off" switches in a single package. The on-off switch is known in electrical engineering as a "single pole-single throw" (SPST) switch

that allows only for the power to be connected or disconnected to a single circuit or component. This is the switch that is most often used for wall light switches in homes, for example. I have had the pleasure to teach undergraduate (and graduate) students about on-off and other switches for 30 years in courses on analog circuits.

72. Excellent definitions of DIP switches can be found in multiple books and online sources. One example is that provided by the UK electrical component manufacturer RS Components:

“DIP switches are typically presented as a row of tiny toggle (on/off) switches, rather like a series of miniature standard light switches, mounted sequentially on a block of heat-resistant thermoplastic polymer.”

“A DIP switch is a relatively simple and cost-effective component that’s commonly used as an inexpensive way to select and change between various hardware or device options. They’re usually considerably cheaper than other options such as software control panels or programmable chips, with the compromise being that DIP switches require the user to physically open the device to access the PCB, and operate the switches manually from there.”

(RS Components, “The Complete Guide to DIP Switches” (available at: <https://uk.rs-online.com/web/content/discovery/ideas-and-advice/dip-switches-guide>)).

73. In view of the definitions above (and elsewhere), the simple DIP switch discussed in the ’424 Provisional bears no resemblance to the switches discussed at length in the ’394 Application filed in June of 2018. For example, the DIP switch does not have a “range of positions” such as a rotary switch or a slide switch might have. As mentioned by the RS Components definition presented in the last paragraph, DIP switches are also generally not mounted on an exterior surface of an electrical system (the front or rear panels, for example) because the individual switches are quite small and have a “rocker” design:

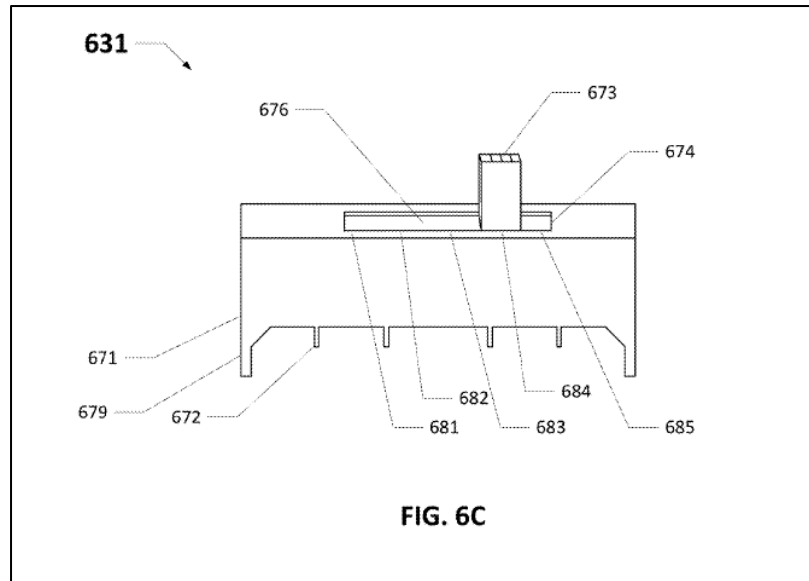
“As a complete component, a set of DIP switches is almost always very small, requiring some dexterity on the user’s part to toggle each switch between on and off positions. In day to day practice, this function is often performed with the point of a sharp pencil or a similar suitably shaped tool, as the individual switches themselves tend to be too small for comfortable finger operation.”

(RS Components, “The Complete Guide to DIP Switches” (available at: <https://uk.rs-online.com/web/content/discovery/ideas-and-advice/dip-switches-guide>).)

74. In summary, the ’424 Provisional is silent with respect to the “range of positions” that is a requirement of the switch described in claims 13-20 of the ’336 Patent. Similarly, it is silent with respect to a “coupling feature” and an “actuator disposed on the body”. Nowhere in the ’424 Provisional is there a hint of either aspect of the ’336 Patent’s description of the switch. It should also be mentioned that “coupling” or “coupling feature”, employed in both the specification and claims of the ’336 Patent, are not terms of art. In fact, although these terms occur in mechanical engineering, the term for making an electrical connection is precisely that—an electrical connection.

75. For example, claim 13 requires “*an* actuator”, but the ’424 Provisional *only* discloses the use of multiple switches 210 (including “(DIP) switches.”). *Id.* Each of the switches 210 would necessarily include separate actuators; however, claim 13 requires a CCT switch with *an* actuator. A POSA would not have understood the multiple-DIP switch configuration of the ’424 Provisional to include a CCT switch with *an* actuator. The ’394 Application on the other hand discloses multiple configurations of CCT switches with “an actuator” as recited in claim 13 of the ’336 Patent. For example, when the applicant filed the ’394 Application in June 2018, they added Fig. 6C, which discloses a CCT switch with “an actuator 673”—this was the first disclosure of “an actuator”. Further, in the ’394 Application the applicant noted that “the switch 931 can have *an* actuator having multiple positions”, further confirming that the previous disclosures did

not necessarily include “an actuator.” (’336 Patent at 12:3-5.) A POSA would have understood that this is the CCT switch that the applicant claimed in claim 13, not the multi-DIP switch configuration discussed above. Thus, the earliest possible priority date of claim 13 is the June 21, 2018 filing of the ’394 Application because the applicant first disclosed the claimed “actuator” in the ’394 Application.



(*Id.*, Fig. 6C.)

76. As another example, because the ’424 Provisional does not disclose *any* details of the alleged CCT switch, it likewise does not disclose *any* details regarding “coupling feature[s]” of said switch. The applicant, however, did disclose the claimed coupling features when it filed the ’394 Application in June 2018. For example, in Fig. 9 of the ’336 Patent, the applicant disclosed a luminaire wherein “the switch 931 is in-line with the electrical cable 927... the switch 931 *can have one or more coupling features* (e.g., terminal points) that are *used to couple to one or more electrical conductors of one or more electrical cables 927*” as shown below. (’336 Patent, at 11:64-12:3 (emphasis added).) As another example, in Fig. 6, the applicant disclosed a “switch 631 [that] has a body 671 and a number of coupling features 672 (in this case, pins) disposed on

the bottom of the body 671 that allow the switch 631 to become electrically coupled to an electrical connector 629” (’336 Patent, at 9:64-10:4.)

77. The applicant added minor additional disclosures regarding the claimed switch in 2017 in the ’141 Application (which ultimately issued as the ’350 Patent); but this disclosure still fails to describe the claimed body, actuator, or coupling features. While the ’141 Application discloses the use of a single dual inline pin (DIP switch) 131, this switch would likewise have multiple actuators. Further, this disclosure does not describe the claimed body or coupling features.

78. Finally, the ’424 Provisional, ’141 Application, and ’062 Application (which is a continuation of the ’141 Application and contains identical disclosures) only disclose the use of two switches to create three CCT outputs. In the ’394 Application, however, the applicant added additional disclosures of a switch that could have up to five or more positions.

79. In view of the above, it is my opinion that the Asserted Claims are entitled to a Priority Date no earlier than June 21, 2018, the date on which the ’394 Application was filed.

80. I understand that Dr. Krames and Signify have conceded that claim 1 and its dependents (claims 2-12) of the ’336 Patent are not entitled to a priority date earlier than June 21, 2018. Therefore, Signify admits that claim 1 (and its dependents) are not supported by the disclosures of the ’424 Provisional, ’141 Application (which issued as the ’350 Patent), and the ’062 Application. I reserve the right to supplement my response if Signify or Dr. Krames offer any new positions concerning the priority date of claim 1 and its dependents.

VIII. NONINFRINGEMENT OPINIONS

81. Dr. Krames devotes a substantial portion of his report addressing alleged noninfringement arguments that he anticipates the defendants to assert based upon his review of

the defendants' interrogatory responses. (Krames Report, at ¶ 260.) I understand that Dr. Krames's report was intended to address whether or not he feels the Accused Products infringe the Asserted Claims. My report is similarly intended to address whether or not I believe the Accused Products infringe the Asserted Claims in view of my analysis, education, and experience. It is my conclusion that the Accused Products do not practice the Asserted Claims of the '336 and '506 Patents. Thus, to the extent I find that the Accused Products do not infringe the Asserted Claims for reasons that Dr. Krames addressed in his report, I will respond directly to such opinions. But to the extent Dr. Krames opines as to extraneous issues that are not the basis of my invalidity opinions, I see no need to respond to such opinions.

82. As addressed above, it is my opinion that Dr. Krames failed to establish any of the identified "primary" or "exemplary" representative products as containing sufficient similarities for purposes of evaluating infringement for the remaining accused product SKUs. It is therefore my opinion that Dr. Krames has failed to establish infringement of any Accused Products SKUs not charted in his Appendices D-1, D-2, D-3, D-4, D-5, C-1, and C-2, as he failed to perform the necessary limitation-by-limitation analysis required to establish infringement. Accordingly, in preparing my opinions in response to those offered by Dr. Krames, I primarily address only those accused product SKUs that Dr. Krames charted in his Appendices D-1, D-2, D-3, D-4, D-5, C-1, and C-2 and analyzed on a limitation-by-limitation basis (*i.e.*, only those accused product SKUs that Dr. Krames identified as "primary" or "exemplary" representative products).

A. The Accused Products Do Not Practice Every Limitation of the Asserted Claims of the '336 Patent

83. I understand that Signify asserts claims 1, 3-5, 7, 9, 11-13, 15, 16, and 19 of the '336 Patent, which I have reproduced below:

1. [p] A luminaire comprising:

[a] a housing comprising at least one outer surface that forms a first cavity;

[b] at least one electrical component disposed, at least in part, within the first cavity;

[c] an electrical cable comprising a first end and a second end, wherein the first end is coupled to the at least one electrical component; and

[d] a switch coupled to the electrical cable, wherein the switch is disposed remotely from the housing,

[e] wherein the switch has a plurality of positions, wherein each position of the plurality of positions of the switch corresponds to a discrete correlated color temperature (CCT) output by one or more light sources of the luminaire.

3. The luminaire of claim 1, wherein each position of the plurality of positions is discrete.
4. The luminaire of claim 3, wherein the plurality of positions of the switch comprises a first position, a second position, a third position, a fourth position, and a fifth position.
5. The luminaire of claim 4, wherein the first position of the switch corresponds to 2700 Kelvin (K) output by the one or more light sources, wherein the second position of the switch corresponds to 3000 K output by the one or more light sources, wherein the third position of the switch corresponds to 3500 K output by the one or more light sources, wherein the fourth position of the switch corresponds to 4000 K output by the one or more light sources, and wherein the fifth position of the switch corresponds to 5000 K output by the one or more light sources.
7. The luminaire of claim 1, further comprising: a junction box comprising at least one wall that forms a second cavity, wherein the switch is disposed within the second cavity, wherein the second end of the electrical cable is coupled to the switch.
9. The luminaire of claim 1, wherein the switch is a slide switch.
11. The luminaire of claim 1, wherein the switch is inaccessible when the housing is installed.
12. The luminaire of claim 1, wherein the switch is accessible to a user when the housing is removed from its installed location.

13. [p] A switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire, the switch comprising:
 - [a] a body;
 - [b] at least one first coupling feature disposed on the body, wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire; and
 - [c] an actuator disposed on the body, wherein the actuator has a range of positions,
 - [d] wherein each position of the range of positions of the actuator corresponds to a CCT of the light emitted by the luminaire.
15. The switch of claim 13, wherein each position is discrete within the range of positions.
16. The switch of claim 15, wherein the range of positions comprises a first position, a second position, a third position, a fourth position, and a fifth position.
19. The switch of claim 13, wherein the body is configured to be disposed within a junction box.

84. I have been asked to consider whether the Accused Products infringe claims 1, 3-5, 7, 9, 11-13, 15, 16, and 19 of the '336 Patent. It is my opinion that the Accused Products do not infringe these Asserted Claims.

85. In the following sections, I provide my opinions as to why the Accused Products do not infringe the Asserted Claims of the '336 Patent and discuss in detail the reasons and evidence supporting my opinions.

1. The Accused Products Do Not Practice Every Element of Claim 1

86. Claim 1 of the '336 Patent contains six different limitations, or elements, including the preamble. After comparing the Accused Products to each and every limitation of claim 1, it is my opinion that the Accused Products do not practice claim 1 as they fail to satisfy multiple elements. Specifically, the Accused Products do not practice at least elements 1[c] and 1[d].

87. Element 1[c] of claim 1 of the '336 Patent states: “an electrical cable comprising a first end and a second end, wherein the first end is coupled to the at least one electrical component. . . .” Element 1[d] of claim 1 of the '336 Patent recites: “a switch coupled to the electrical cable.”

88. It is my opinion that the Accused Products do not practice elements 1[c] and 1[d] of claim 1 of the '336 Patent because these products do not comprise “*an* electrical cable” that is coupled to both the switch and the housing of the luminaire. Elements 1[c] and 1[d] require a single electrical cable that is both connected to the housing and the CCT switch. For example, element 1[c] refers to “*an* electrical cable” and element 1[d] further requires that the CCT switch is “coupled to *the* electrical cable.” (See '336 Patent, at claim 1.) The Accused Products, however, do not include a single electrical cable that is connected to both the housing and the CCT switch as required by elements 1[c] and 1[d]. Dr. Krames provided three infringement charts addressing claim 1 of the '336 Patent (see Appendix D-1, D-2, and D-5) and, as discussed below, each of these charts demonstrate that the Accused Products do not include the claimed “electrical cable.”

89. **First**, Dr. Krames charts SKU 349-1292 as representative of SKUs 348-2106, 348-2107, 349-1203, and 349-1202 in Appendix D-1 to the Krames Report. While I disagree with Dr. Krames’s representative arguments as discussed above, for purposes of rebutting Dr. Krames’s arguments, I focus my analysis on SKU 349-1292, which Dr. Krames alleges is “representative of all Accused Products” charted in Appendix D-1 (*i.e.*, SKU Nos. 348-2106, 348-2107, 349-1202, and 349-1203). (See Krames Report, Appx. D-1, at 2.) Dr. Krames’s own infringement chart demonstrates that SKU No. 349-1292 does not include the claimed “electrical cable.” As shown in the annotated screenshot from Appendix D-1, cable 2 on the left is connected to the junction box (where the switch is located) and cable 1 is connected to the luminaire. As shown in Dr.

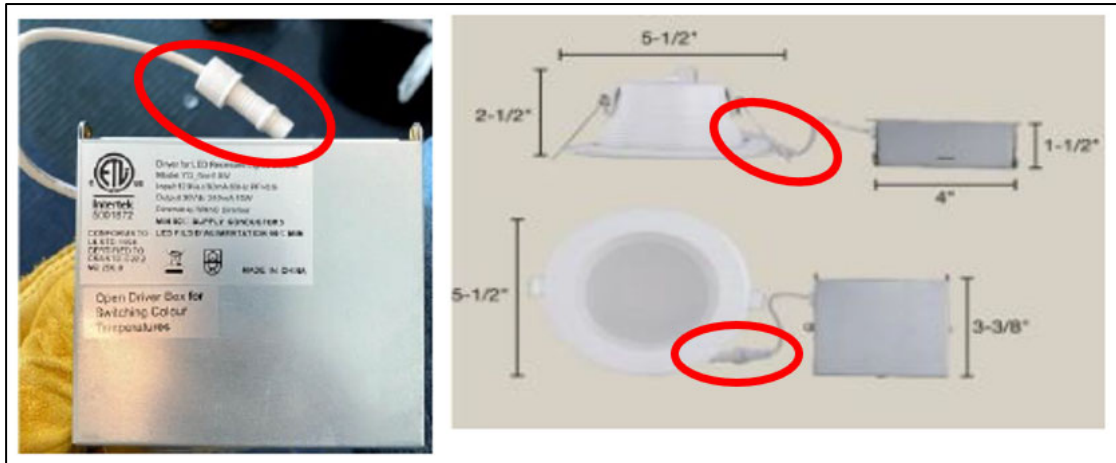
Krames's photo, cable 2 begins in the junction box and terminates with a threaded fitting. Cable 1 begins in the housing and terminates with a corresponding fitting. They are two unique, unidentical cables. The connection location is circled in red below. If you were to go to an electronics store to shop for connectors, the two connector pieces attached to cables 1 and 2 would be sold separately. Because SKU 349-1292 does not include "*an* electrical cable" that connects both the switch and the housing, SKU 349-1292 (and therefore the other products in Appendix D-1) does not practice elements 1[c] and 1[d].



(Krames Report, Appx. D-1, at 38 (annotated).)

90. **Second**, Dr. Krames charts SKU 349-1348 as representative of SKU Nos. 349-1294, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394 in Appendix D-2 to the Krames Report. While I disagree with Dr. Krames's representative arguments as discussed above, for purposes of rebutting Dr. Krames's arguments, I focus my analysis on SKU 349-1348, which Dr. Krames alleges is "representative of all Accused Products" charted in Appendix D-2 (*i.e.*, SKU Nos. 349-1294, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394). (*See* Krames Report,

Appendix D-2, at 2.) Dr. Krames's infringement chart demonstrates that SKU No. 349-1348 does not include the claimed "electrical cable." As shown in the annotated screenshot from Appendix D-2 below, SKU 349-1348 includes two cables, using the same setup as SKU 349-1292 discussed above. Thus, the products charted in Appendix D-2 do not meet elements 1[c] and 1[d] for the same reasons as the products charted in Appendix D-1 discussed above.



(Krames Report, Appendix D-2, at 38 (annotated)).

91. **Third**, Dr. Krames charts SKU 349-2101 as representative of SKU Nos. 349-1395, 349-2102, 349-2134, 349-2135, and 349-2203 in Appendix D-5 to the Krames Report. While I disagree with Dr. Krames's representative arguments as discussed above, for purposes of rebutting Dr. Krames's arguments, I focus my analysis on SKU 349-2101, which Dr. Krames claims is "representative of all Accused Products" charted in Appendix D-5 (*i.e.*, SKU Nos. 349-1395, 349-2102, 349-2134, 349-2135, and 349-2203). (See Krames Report, Appendix D-5, at 2.) Dr. Krames's own infringement chart demonstrates that SKU No. 349-2101 does not include the claimed "electrical cable." As shown in the annotated screenshot from Appendix D-5 below, SKU 349-2101 includes two cables, using the same setup as SKU 349-1292 discussed above. Thus, the

products charted in Appendix D-5 do not meet elements 1[c] and 1[d] for the same reasons as the products charted in Appendix D-1 discussed above.



(Krames Report, Appendix D-5, at 25 (annotated).)

92. I note that the configurations of SKU Nos. 349-1202, 349-1348, and 349-2101 are very similar to the configuration of the Chaimberg prior art reference that I analyzed in my Opening Report. To the extent Dr. Krames and Signify assert that the cable of SKU Nos. 349-1202, 349-1348, and 349-2101 are the cable recited in claim 1 of the '336 Patent, then so to is the cable shown in Chaimberg. I likewise note that there is overlap with my other prior art invalidity arguments as well, again to the extent Dr. Krames and Signify assert that any of the Accused Products meet the limitations of the Asserted Claims, then the similar features in the cited prior art meet the limitations as well.

93. The Accused Products SKU 348-2106 and SKU 348-2107 are a Back-lit Flat Panels which are similar to each other in construction but different in size. As an initial matter, SKU 349-1292 is not representative of either of these two products and Dr. Krames has not provided any proper infringement allegations for SKUs 348-2106 and 348-2107.

94. Still, as noted above claim 1 includes [c] an electrical cable comprising a first end and a second end, wherein the first end is coupled to the at least one electrical component; and [d] a switch coupled to the electrical cable, wherein the switch is disposed remotely from the housing. The cable has been defined as being interpreted as its plain meaning or as an insulated wire or wires wrapped in a protective casing, jacket or sheathing, which in my opinion is its plain meaning. A picture of the relevant switch of each product is shown below of SKU 348-2106 (upper figure) and SKU 348-2107 (lower figure). By inspection, it is clear that there are only individual colored wires connected to the white switch. Therefore, there are no cables present. In addition, the switch is not disposed remotely from the housing but rather is located in an inner compartment of the light housing. Therefore, these products do not infringe claim 1.





2. The Accused Products Do Not Practice Every Limitation of Claim 3

95. Claim 3 of the '336 Patent recites: “The luminaire of claim 1, wherein each position of the plurality of positions is discrete.”

96. Claim 3, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 3, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

3. The Accused Products Do Not Practice Every Limitation of Claim 4

97. Claim 4 of the '336 Patent recites: “The luminaire of claim 3, wherein the plurality of positions of the switch comprises a first position, a second position, a third position, a fourth position, and a fifth position.”

98. Claim 4, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 4, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

4. The Accused Products Do Not Practice Every Limitation of Claim 5

99. Claim 5 of the '336 Patent recites: “The luminaire of claim 4, wherein the first position of the switch corresponds to 2700 Kelvin (K) output by the one or more light sources, wherein the second position of the switch corresponds to 3000 K output by the one or more light sources, wherein the third position of the switch corresponds to 3500 K output by the one or more light sources, wherein the fourth position of the switch corresponds to 4000 K output by the one or more light sources, and wherein the fifth position of the switch corresponds to 5000 K output by the one or more light sources.”

100. Claim 5, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 5, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

5. The Accused Products Do Not Practice Every Limitation of Claim 7

101. Claim 7 of the '336 Patent recites: “The luminaire of claim 1, further comprising: a junction box comprising at least one wall that forms a second cavity, wherein the switch is disposed within the second cavity, wherein the second end of the electrical cable is coupled to the switch.”

102. Claim 7, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 7, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

6. The Accused Products Do Not Practice Every Limitation of Claim 9

103. Claim 9 of the '336 Patent recites: “The luminaire of claim 1, wherein the switch is a slide switch.”

104. Claim 9, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 9, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

7. The Accused Products Do Not Practice Every Limitation of Claim 11

105. Claim 11 of the '336 Patent recites: “The luminaire of claim 1, wherein the switch is inaccessible when the housing is installed.”

106. Claim 11, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 11, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

107. Dr. Krames asserts that the CCT switch of the Accused Products is “inaccessible when the housing is installed,” but, Dr. Krames’s analysis does not consider that the switch is accessible to the user in common configurations even without removing the housing. For example, if the Accused Products were installed in a ceiling with drop tile, the CCT switch would be accessible if an adjacent tile were removed, even if the housing were still installed. Accordingly, Dr. Krames has not established that the Accused Products practice the limitations of claim 11.

8. The Accused Products Do Not Practice Every Limitation of Claim 12

108. Claim 12 of the '336 Patent recites: “The luminaire of claim 1, wherein the switch is accessible to a user when the housing is removed from its installed location.”

109. Claim 12, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 12, at least for its inclusion of claim elements 1[c] and 1[d], which as I discussed above, are not practiced by the Accused Products.

110. Further, based on Dr. Krames's own analysis in claim 11, the switches of certain Accused Products remain inaccessible after the housing is removed. (See Krames Report, Appendix D-1 (348-2106, 349-1202, 348-2107, 349-1203, and 349-1292); and Appendix D-2 (349-1294, 349-1348, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394).) For example, Dr. Krames notes that "the junction box's lid remains closed upon installation of the downlight, *thereby further rendering the CCT selection switch inaccessible.*" (*Id.*, Appendix D-1, at 81; *see also, id.*, Appendix D-2, at 73 (same).) This opinion squarely conflicts with Dr. Krames's argument that the switch in these SKUs becomes accessible by simply removing the housing as required by claim 12. If the switches are inaccessible due to the lid on the junction box being shut when the housing is installed, then the switches are still inaccessible after removing the housing from its installed location in the ceiling. Thus, based on Dr. Krames's own arguments, the switches are not rendered accessible in SKUs 348-2106, 349-1202, 348-2107, 349-1203, and 349-1292, 349-1294, 349-1348, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394 by removing the housing as required by claim 12 of the '336 Patent.

9. The Accused Products Do Not Practice Every Limitation of Claim 13

111. Claim 13 of the '336 Patent contains five different limitations, including the preamble. After comparing the Accused Products to each and every limitation of claim 13, it is my opinion that the Accused Products do not practice claim 13 as they fail to satisfy multiple

limitations. Specifically, the Accused Products do not practice at least limitations 13[p], 13[b], and 13[c].

a. The Accused Products Do Not Practice Limitation 13[p]

112. Element 13[p] of claim 13 of the '336 Patent states: "A switch for controlling a correlated color temperature (CCT) of light emitted by a luminaire, the switch comprising."

113. As I discussed above in Section VII.B, the '424 Provisional and the '062 and '141 Applications support (at most) the use of one or more DIP switches to indirectly adjust the CCT output of a luminaire. Therefore, to the extent Signify and Dr. Krames allege that claim 13 (and its dependents) is entitled to the filing date of either the '424 Provisional or the '062 and '141 Applications, the claimed CCT switch is, in my opinion, limited to one or more DIP switches. However, none of the Accused Products include a DIP switch. Consequently, given the interpretation of claim 13 of the '336 Patent by Signify and Dr. Krames, none of the Accused Products include the claimed CCT switch.

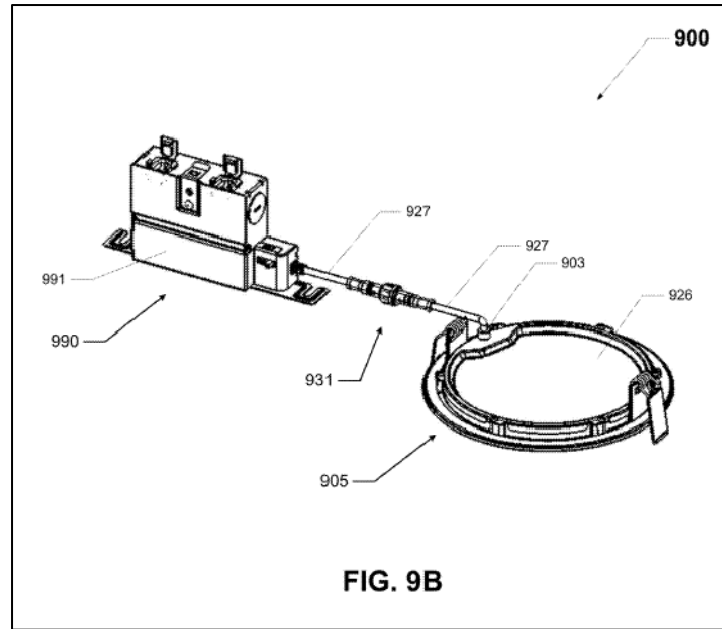
114. Thus, the Accused Products do not practice element 13[p] of claim 13 of the '336 Patent.

b. Dr. Krames's Plain and Ordinary Meaning Of Element 13[b] is Incorrect

115. In Section IX.C.3 of his report, Dr. Krames set forth his interpretation of the following portion of element 13[b]: "wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire." *Id.* Dr. Krames stated that this limitation does not require a direct connection between the switch and electrical cable. *Id.* I disagree. In particular, the specification of the '336 Patent makes clear that the phrase "coupling feature ... configured to electrically couple" requires a defined and direct connection between the switch and the electrical cable of the luminaire.

116. As I discussed above, the term “coupling feature” is not a term of art in electrical engineering. The only context (of which I am aware) in the field of electrical (analog) circuits in which the term “coupling” appears is that in which a magnetic field “couples” the primary and secondary windings of a transformer. However, the specification of the ‘336 patent appears to employ “coupling” as an electrical connection between two or more electrical or optical components or devices. If that definition of “coupling” is adopted, then Dr. Krames is incorrect in concluding that a direct connection between the electrical cable and the switch is not required.

117. The applicant first added the “electrically coupled” claim limitation when the ‘394 Application was filed in June 2018. The applicant likewise first disclosed coupling features in the ‘394 Application. For example, in Fig. 9 of the ‘394 Application, the applicant (for the first time) disclosed a luminaire wherein “the switch 931 is in-line with the electrical cable 927 [T]he switch 931 *can have one or more coupling features* (e.g., terminal points) that are *used to couple to one or more electrical conductors of one or more electrical cables 927*” as shown below. (’336 Patent, at 11:64-12:3 (emphasis added).) This disclosure is the only alleged disclosure of a switch that includes “one or more coupling features . . . that are used to couple to . . . one or more electrical cables” as required by element 13[b]. (*Id.* at 12:1-3).



(’336 Patent, Fig. 9B.)

118. Accordingly, a POSA would understand that element 13[b] requires a direct coupling between the switch and electrical cable.

c. The Accused Products Do Not Practice Limitation 13[b]

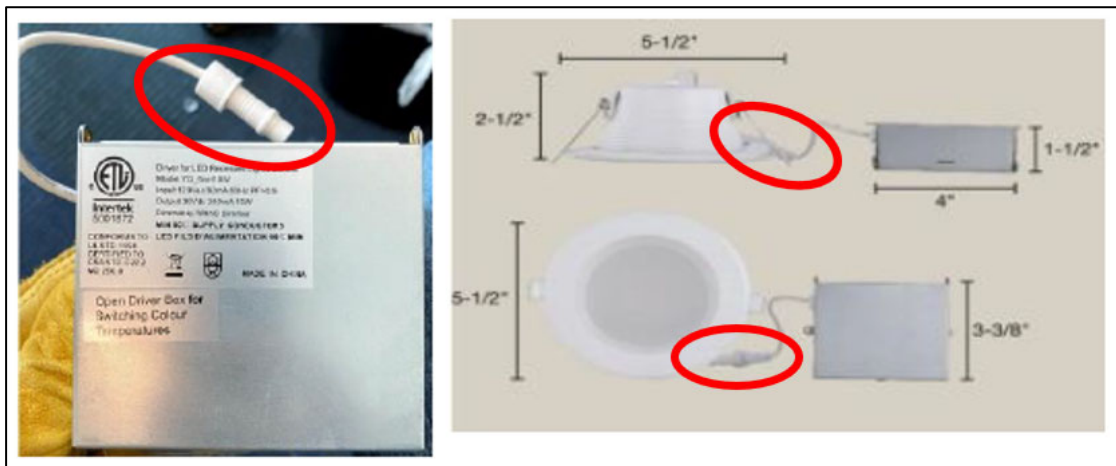
119. Element 13[b] of claim 13 of the ’336 Patent reads as follows: “at least one first coupling feature disposed on the body, wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire.”

120. **First**, the Accused Products charted in Appendices D-1, D-2, and D-5 do not practice element 13[b] because the switch is not coupled to “an electrical cable of the luminaire.” I explained above in Section VIII.A.1 that the following Accused Products do not include a single cable that connects the CCT switch to the luminaire housing: 348-2106, 348-2107, 349-1203, 349-1292, 349-1294, 349-1348, 349-1352, 349-1391, 349-1392, 349-1393, 349-1394, 349-1395, 349-2101, 349-2102, 349-2134, 349-2135, and 349-2203. As discussed above, the cable that connects to the junction box (where the switch is located) is not connected to the luminaire itself.

For example, as shown in the annotated screenshots from Appendices D-1, D-2, and D-5 below, the Accused Products do not have “*an* electrical cable of the luminaire” that is coupled to the CCT switch as required by element 13[b].



(Krames Report, Appendix D-1, at 38 (annotated).)



(Krames Report, Appendix D-2, at 38 (annotated).)



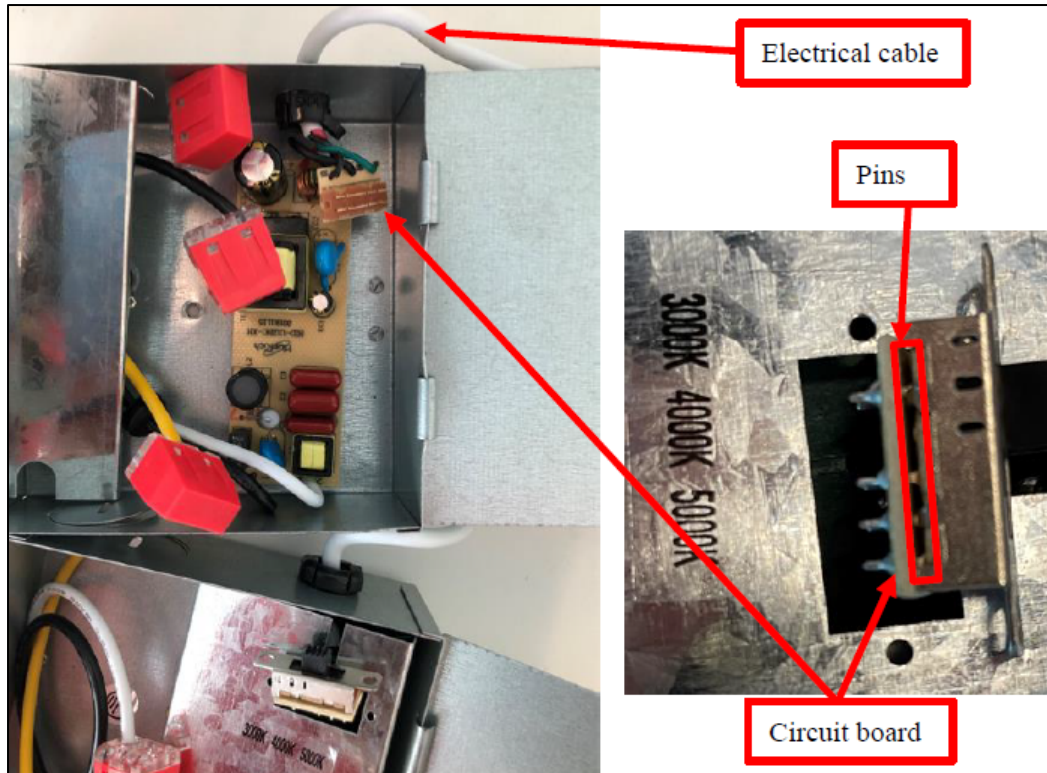
(Krames Report, Appendix D-5, at 25 (annotated).)

121. It is clear from the photographs above (and my own inspection of an Accused Product) that the electrical connection between the luminaire (*i.e.*, the LED lamp and its housing) and its electrical box is made through two cables, not one. The two cables make electrical contact with each other by means of a three-pin electrical fitting which is only partially visible in the first photograph above. The cable from the electrical box (Cable 2) terminates in a three-pin female connector, whereas the connector terminating the cable from the luminaire (Cable 1) is a three-pin male fitting. The electrical integrity of the connection between the two cables is ensured by a cap on Cable 2 having an interior thread that matches the exterior thread on the Cable 1 male fitting. In short, the two cables required for an electrical connection between the luminaire and its power supply (the electrical box) are both separate and distinct from each other. Because the electrical connections must match, the three-pin connectors terminating Cables 1 and 2 are, respectively, male and female. Consequently, Cables 1 and 2 are quite different from each other and not simply one cable as required by the claim language.

122. Thus, the CCT switches of the Accused Products charted in Appendices D-1, D-2, and D-5 do not practice element 13[b].

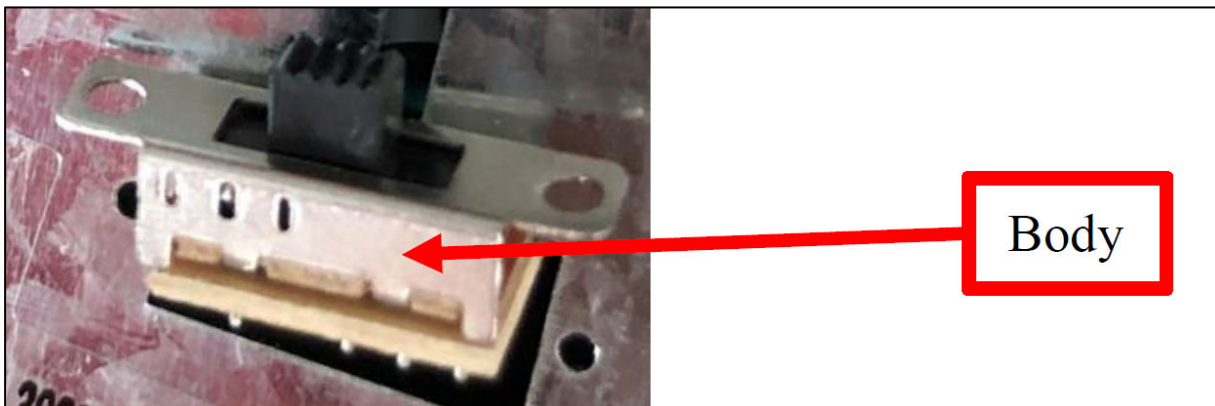
123. **Second**, all of the Accused Products do not meet element 13[b] because each product's respective CCT switch does not include a coupling feature, "wherein the at least one first coupling feature is configured to electrically couple to an electrical cable of the luminaire" because none of the switches in the Accused Products directly couple to an electrical cable of the luminaire as required by element 13[b].

124. As discussed above, Dr. Krames asserts that SKU No. 349-1292 is "representative of all Accused Products" charted in Appendix D-1 (*i.e.*, SKU Nos. 348-2106, 348-2107, 349-1203, and 349-1292). (*See* Krames Report, Appendix D-1, at 2.) While I disagree with Dr. Krames's representative arguments as discussed above, for purposes of rebutting Dr. Krames's arguments, I focus my analysis on SKU 349-1292. For example, as shown in the screenshot from Appendix D-1 below, Dr. Krames identifies "pins" of the "switch" as the alleged coupling feature. (Krames Report, Appendix D-1, at 103.) Dr. Krames alleges that these pins are then connected to a circuit board, which is then connected to an electrical cable. (*Id.*) As I explained above, this electrical cable is not actually connected to the luminaire. Further, even if the cable identified by Dr. Krames were the claimed cable, the switch is not "configured to [be] electrically couple[d] to" the electrical cable because the two are not actually coupled together.



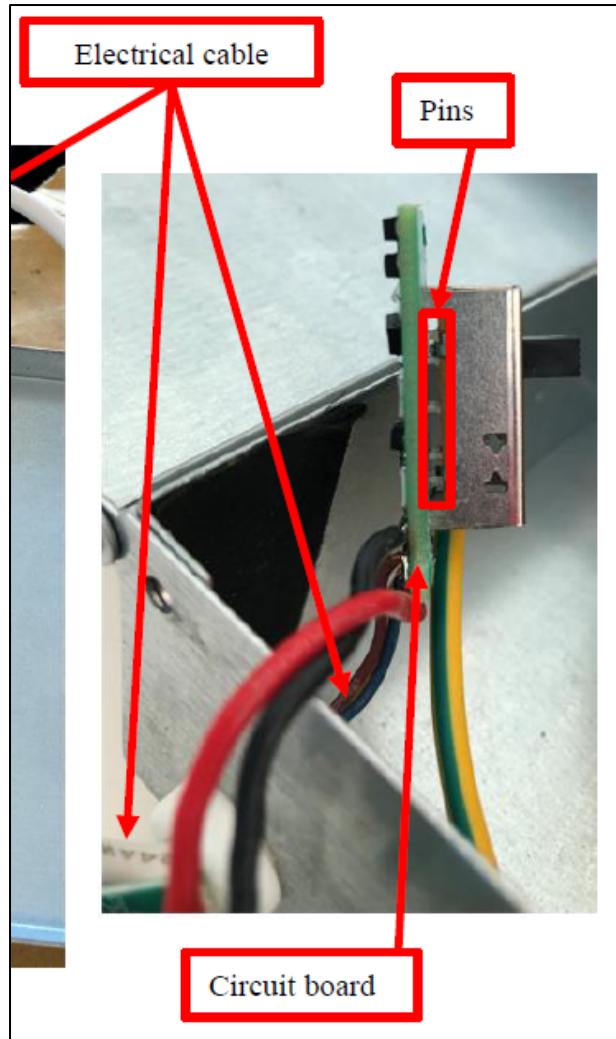
(Krames Report, Appendix D-1, at 103 (annotations in original).)

125. Moreover, when you zoom in on Dr. Krames's photographs, it become clear that the "pins" (the alleged coupling features) are not actually "disposed on" the body as required by Element 13[b]. As shown below, the pins are located within the switch, and appear to be connected to another board located within the switch body, and are not "disposed" on the body as Dr. Krames alleges.



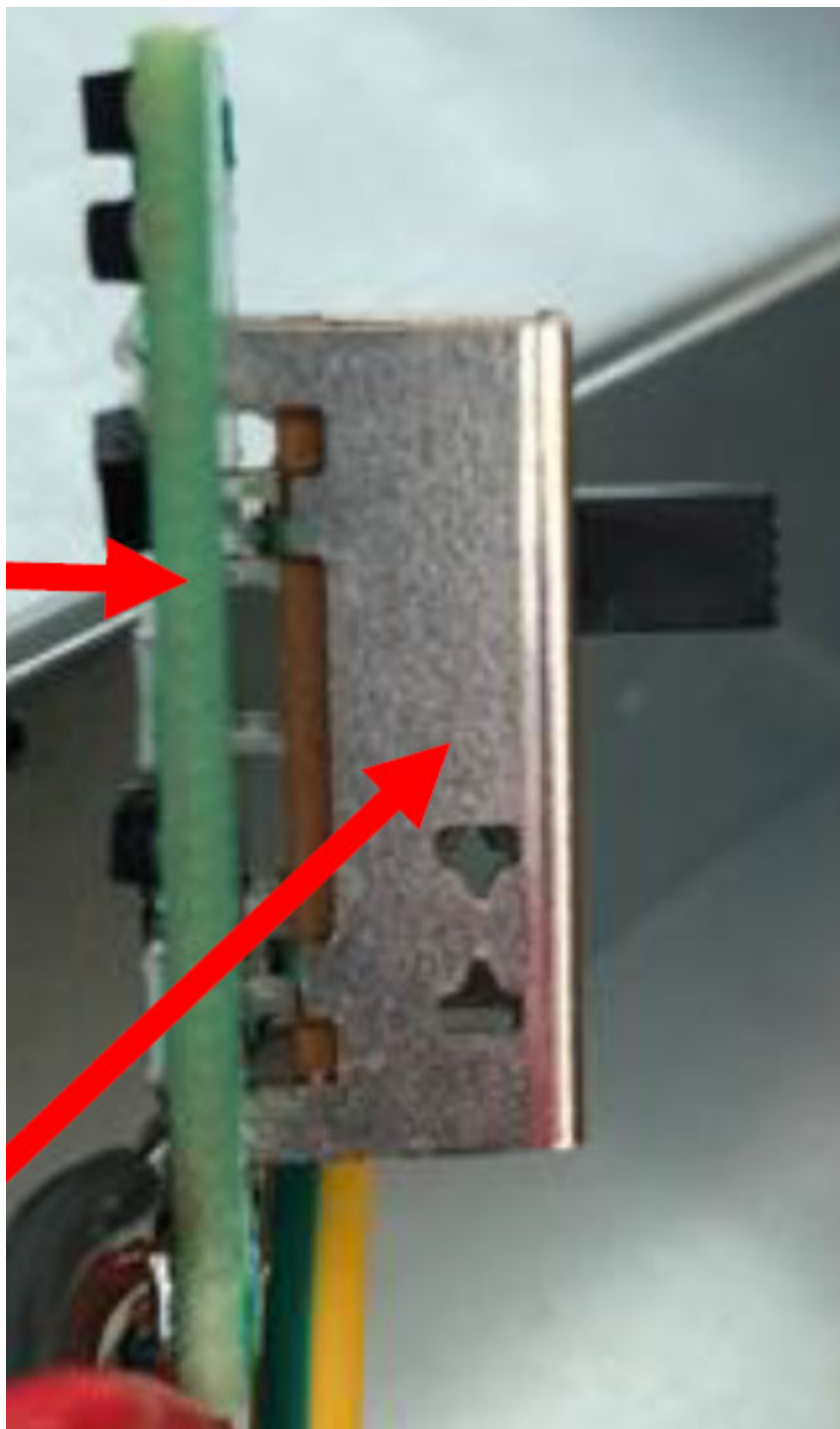
(Krames Report, Appendix D-1, at 99 (annotations in original).)

126. As discussed above, Dr. Krames asserts that SKU 349-1348 is “representative of all Accused Products” charted in Appendix D-2 (*i.e.*, SKUs 349-1294, 349-1348, 349-1352, 349-1391, 349-1392, 349-1393, and 349-1394). (*See* Krames Report, Appendix D-2, at 2.) While I disagree with Dr. Krames’s representative arguments as discussed above, for purposes of rebutting Dr. Krames’s arguments, I focus my analysis on SKU 349-1348. For example, as shown in the screenshot from Appendix D-2 below, Dr. Krames identifies “pins” of the “switch” as the alleged coupling feature. (Krames Report, Appendix D-2, at 91.) Dr. Krames alleges that these pins are then connected to a circuit board, which is then connected to an electrical cable. (*Id.*) For the same reasons discussed above with respect to SKU No. 349-1292, the switch of SKU No. 349-1348 (and the others recited in Appendix D-2) are not “configured to electrically couple to an electrical cable of the luminaire” as recited in element 13[b].



(Krames Report, Appendix D-2, at 91 (annotations in original).)

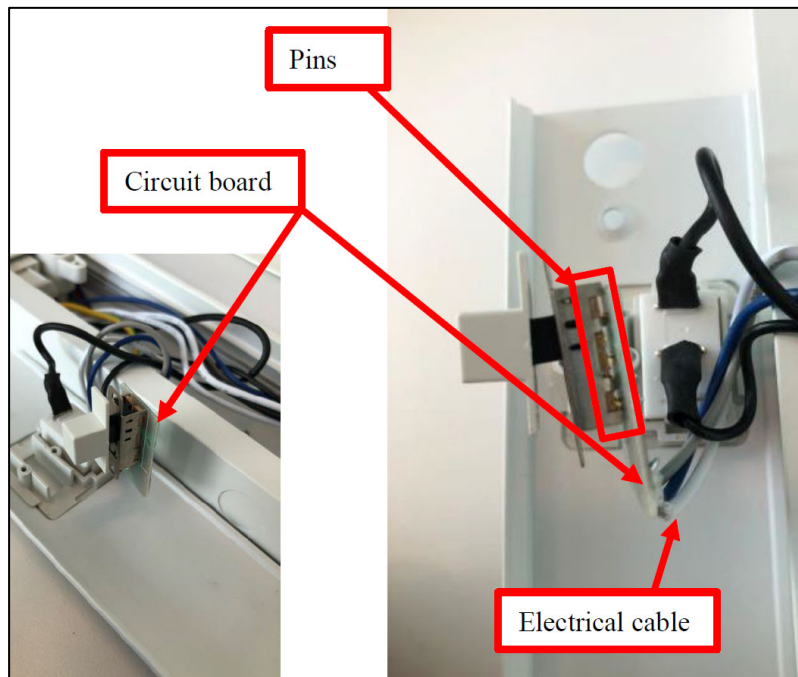
127. Moreover, when you zoom in on Dr. Krames's photographs, it become clear that the "pins" (the alleged coupling features) are not actually "disposed on" the body as required by Element 13[b]. As shown below, the pins are located within the switch, and appear to be connected to another board located within the switch body, and are not "disposed" on the body as Dr. Krames alleges.



(Krames Report, Appendix D-2, at 88 (annotations in original).)

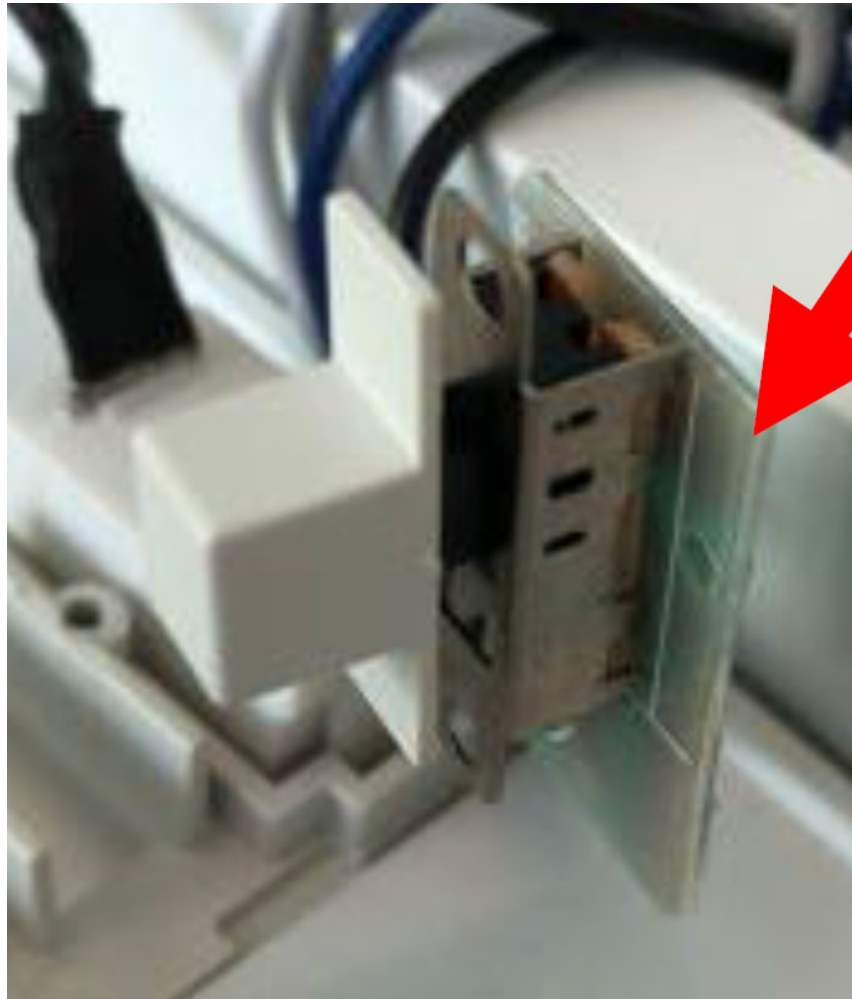
128. As discussed above, Dr. Krames asserts that SKU No. 346-0639 is “representative of all Accused Products” charted in Appendix D-3 (*i.e.*, SKU Nos. 346-0635, 346-0636, 346-0637,

346-0638, 346-0640, 346-0874, 346-0875, 346-0877, 346-0880, 346-0881, 346-0882, 346-0884, 346-0885, 346-0886, 346-2222, 346-2223, 346-2224, 346-7203, 346-7204, 346-7205, 346-7211, 348-2120, 348-2127, 348-2130, 348-2131, 348-2168, 348-2169, 348-2170, 348-2182, 349-1279, 349-1359, 349-1396, 349-2100, 351-0008, 351-1510, 351-1511, and 356-9473). (See Krames Report, Appendix D-3, at 6.) While I disagree with Dr. Krames’s representative arguments as discussed above, for purposes of rebutting Dr. Krames’s arguments, I focus my analysis on SKU 346-0639. For example, as shown in the screenshot from Appendix D-3 below, Dr. Krames identifies “pins” of the “switch” as the alleged coupling feature. (Krames Report, Appendix D-3, at 85.) Dr. Krames alleges that these pins are then connected to a circuit board, which is then connected to an electrical cable. (*Id.*) For the same reasons discussed above with respect to SKU 349-1292, the switch of SKU 346-0639 (and the others recited in Appendix D-3) are not “configured to electrically couple to an electrical cable of the luminaire” as recited in element 13[b].



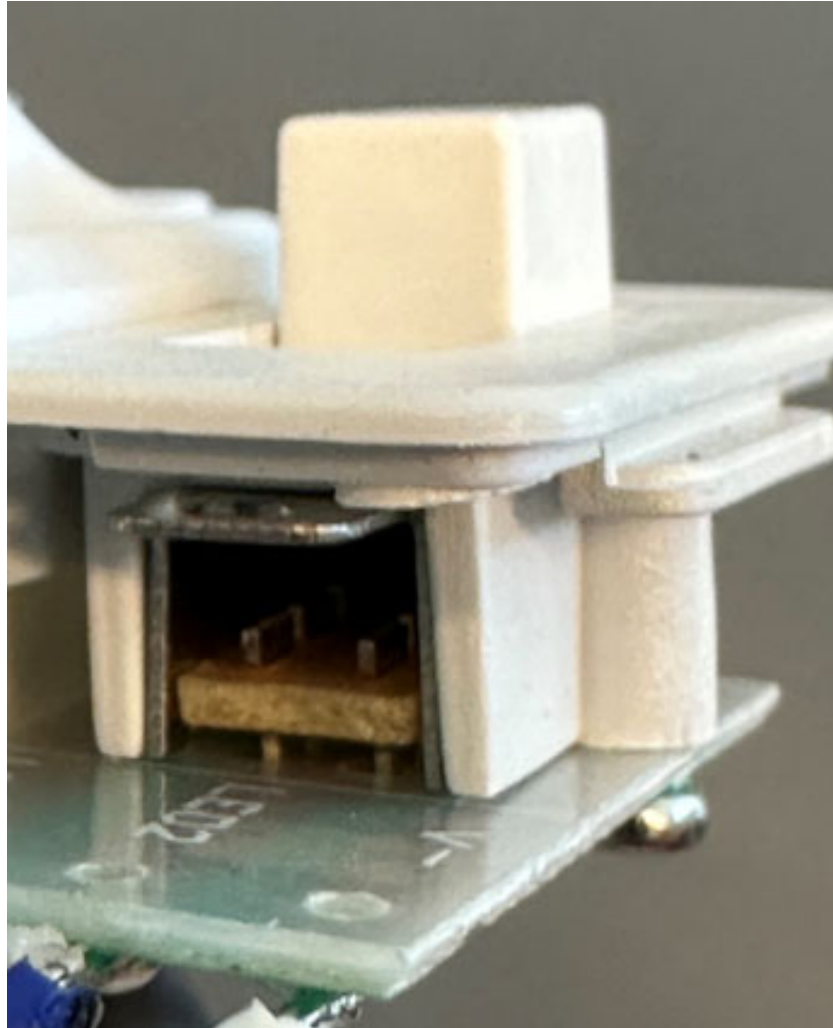
(Krames Report, Appendix D-3, at 85 (annotations in original).)

129. Moreover, when you zoom in on Dr. Krames's photographs, it become clear that the "pins" (the alleged coupling features) are not actually "disposed on" the body as required by Element 13[b]. As shown below, the pins are located within the switch, and appear to be connected to another board located within the switch body, and are not "disposed" on the body as Dr. Krames alleges.



(Krames Report, Appendix D-3, at 85 (annotations in original).)

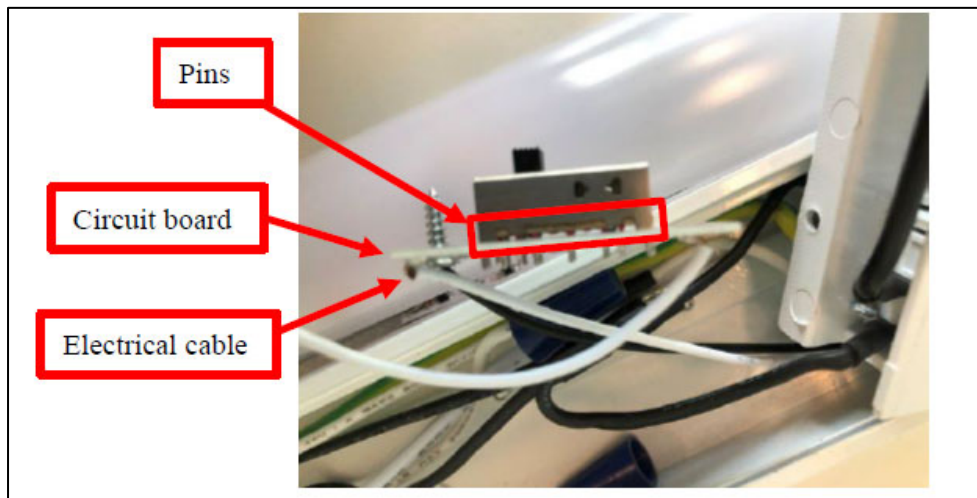
130. Finally, I confirmed this when I examined a sample of SKU 346-0639. As shown in the photograph below, the pins are not disposed on the alleged body of the switch as alleged by Dr. Krames.



131. Thus, the Accused Products do not practice element 13[b] of claim 13 of the '336 Patent.

132. As discussed above, Dr. Krames asserts that SKU 346-7258 is “representative of all Accused Products” charted in Appendix D-4 (*i.e.*, SKUs 346-7259, 346-7260, 346-7261, 346-7262, 348-2224, 348-2225, 348-2226, 349-1274, 349-1342, 349-1343, 349-1385, 349-1386, 349-1387, 349-1388, 349-2202, 351-0001, 351-0002, 351-0013, and 351-0018). (*See* Krames Report,

Appendix D-4, at 3-4.) While I disagree with Dr. Krames’s representative arguments as discussed above, for purposes of rebutting Dr. Krames’s arguments, I focus my analysis on SKU 346-7258. For example, as shown in the screenshot from Appendix D-4 below, Dr. Krames identifies “pins” of the “switch” as the alleged coupling feature. (Krames Report, Appendix D-4, at 52.) Dr. Krames alleges that these pins are then connected to a circuit board, which is then connected to an electrical cable. (*Id.*) For the same reasons discussed above with respect to SKU 349-1292, the switch of SKU 346-7258 (and the others recited in Appendix D-4) are not “configured to electrically couple to an electrical cable of the luminaire” as recited in element 13[b].



(Krames Report, Appendix D-4, at 52 (annotations in original).)

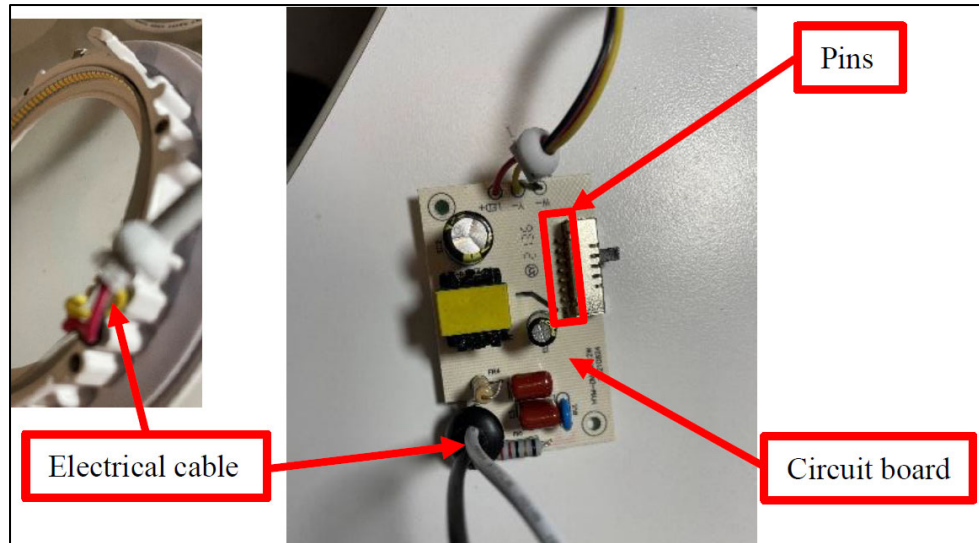
133. Moreover, when you zoom in on Dr. Krames’s photographs, it become clear that the “pins” (the alleged coupling features) are not actually “disposed on” the body as required by Element 13[b]. As shown below, the pins are located within the switch, and appear to be connected to another board located within the switch body, and are not “disposed” on the body as Dr. Krames alleges.



(Krames Report, Appendix D-4, at 52 (annotations in original).)

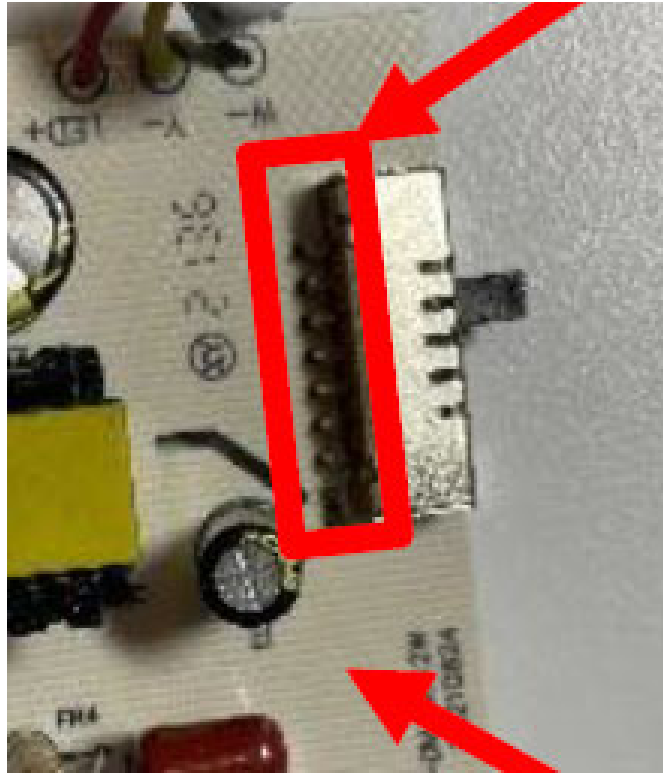
134. Thus, the Accused Products do not practice element 13[b] of claim 13 of the '336 Patent.

135. As discussed above, Dr. Krames asserts that SKU 349-2101 is “representative of all Accused Products” charted in Appendix D-5 (*i.e.*, SKU 349-1395, 349-2101, 349-2102, 349-2134, 349-2135, and 349-2203). (*See* Krames Report, Appendix D-5, at 2.) While I disagree with Dr. Krames’s representative arguments as discussed above, for purposes of rebutting Dr. Krames’s arguments, I focus my analysis on SKU 349-2101. For example, as shown in the screenshot from Appendix D-5 below, Dr. Krames identifies “pins” of the “switch” as the alleged coupling feature. (Krames Report, Appendix D-5, at 83.) Dr. Krames alleges that these pins are then connected to a circuit board, which is then connected to an electrical cable. *Id.* For the same reasons discussed above with respect to SKU 349-1292, the switch of SKU 349-2101 (and the others recited in Appendix D-5) are not “configured to electrically couple to an electrical cable of the luminaire” as recited in element 13[b].



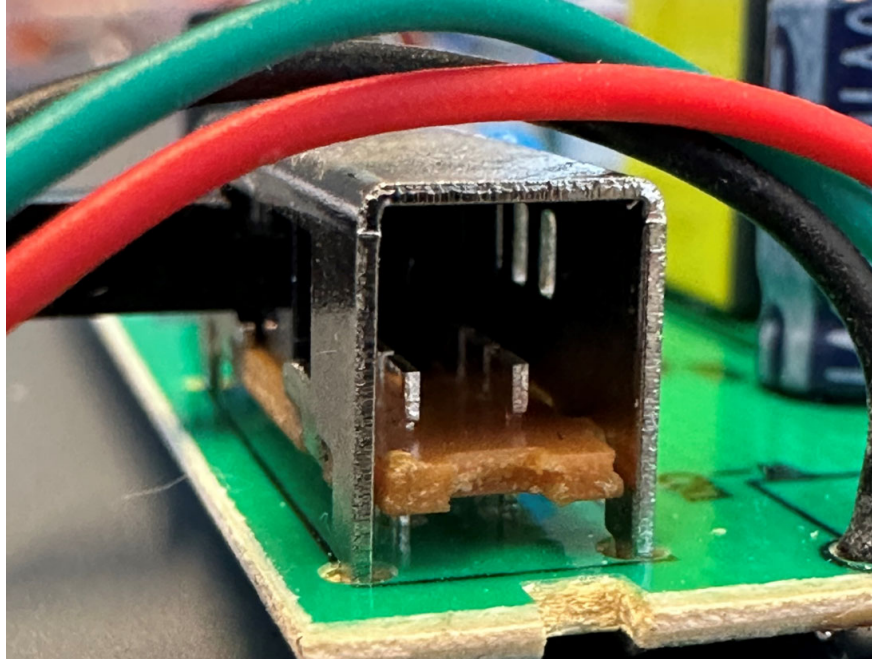
(Krames Report, Appendix D-5, at 83 (annotations in original).)

136. Moreover, when you zoom in on Dr. Krames's photographs, it become clear that the "pins" (the alleged coupling features) are not actually "disposed on" the body as required by Element 13[b]. As shown below, the pins are located within the switch, and appear to be connected to another board located within the switch body, and are not "disposed" on the body as Dr. Krames alleges.



(Krames Report, Appendix D-5, at 83 (annotations in original).)

137. Finally, I confirmed this when I examined a sample of SKU 349-2101. As shown in the photograph below, the pins are not disposed on the alleged body of the switch as alleged by Dr. Krames.



138. Thus, the Accused Products do not practice element 13[b] of claim 13 of the '336 Patent.

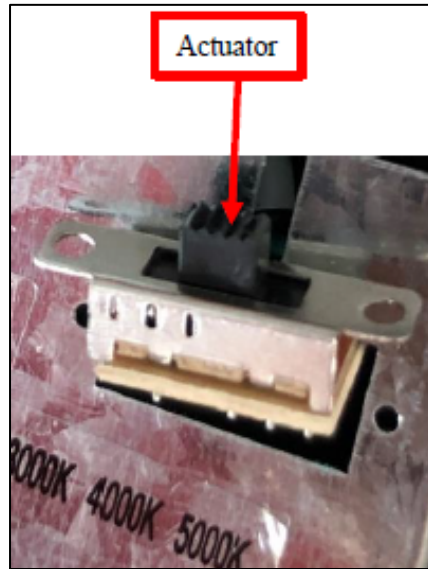
d. The Accused Products Do Not Practice Limitation 13[c]

139. Element 13[c] of claim 13 of the '336 Patent recites: “an actuator disposed on the body, wherein the actuator has a range of positions.”

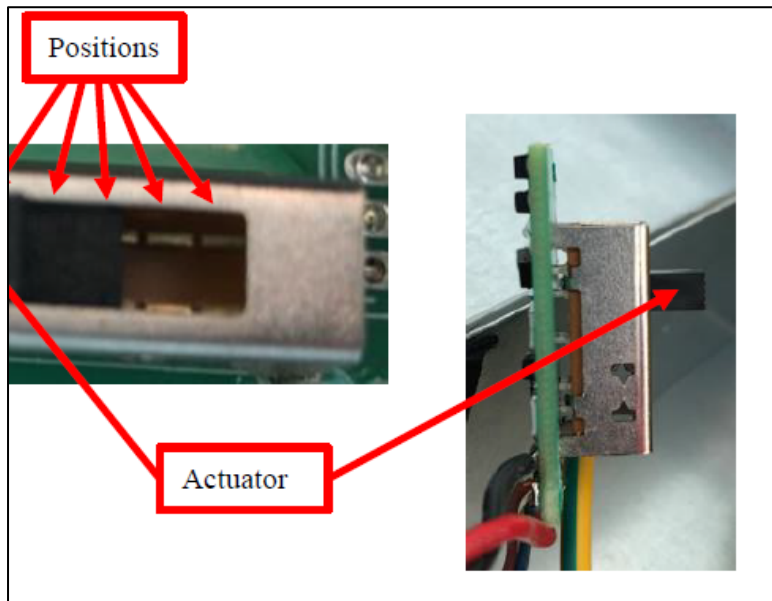
140. I explained in the preceding section why the switch in each of the Accused Products does not practice element 13[b]. I further explain in this section why each of the Accused Products do not practice element 13[c]. For the same reasons discussed above, I focus my analysis on Dr. Krames’s representative products: SKUs 349-1292 (Appendix D-1); 349-1348 (Appendix D-2); 346-0639 (Appendix D-3); 346-7258 (Appendix D-4); and 349-2101 (Appendix D-5).

141. In each of the Accused Products, the alleged actuators are not “disposed on the body” of the switch. Element 13[c] requires that the CCT switch include an actuator that is “disposed ***on***” the body of the switch. As shown in the screenshots for each of Dr. Krames’s infringement charts below, the alleged actuators are situated ***within*** a rectangular slot in the alleged

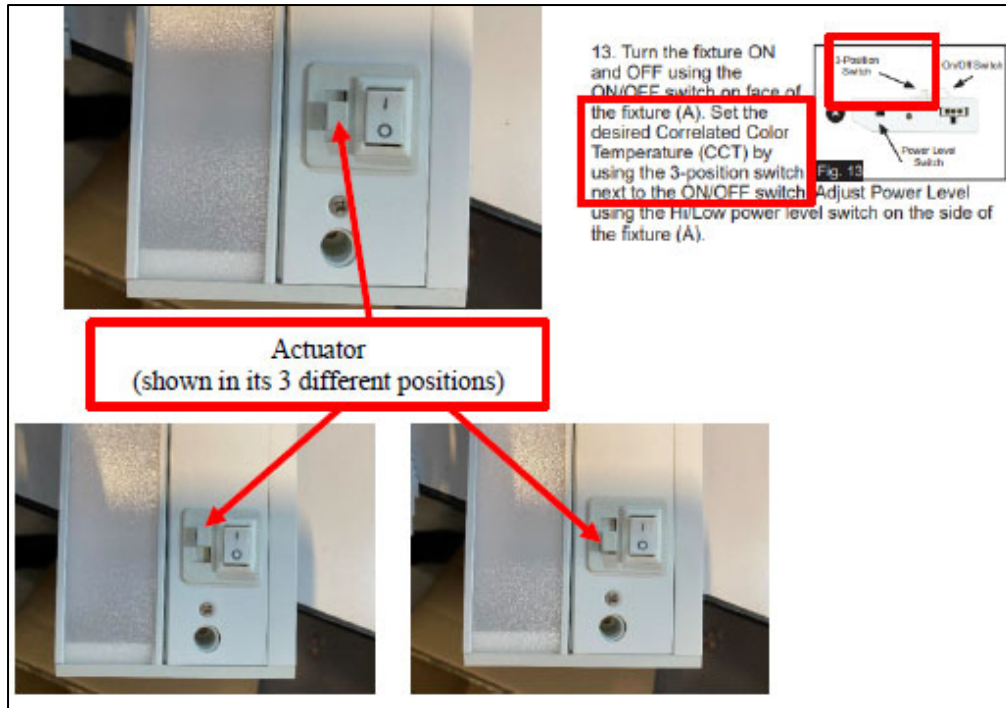
“body” (the metal package) of each CCT slide switch, and the “actuator” protrudes outward from the body. A POSA would understand that these alleged “actuators” are not “disposed *on*” the body as required by element 13[c].



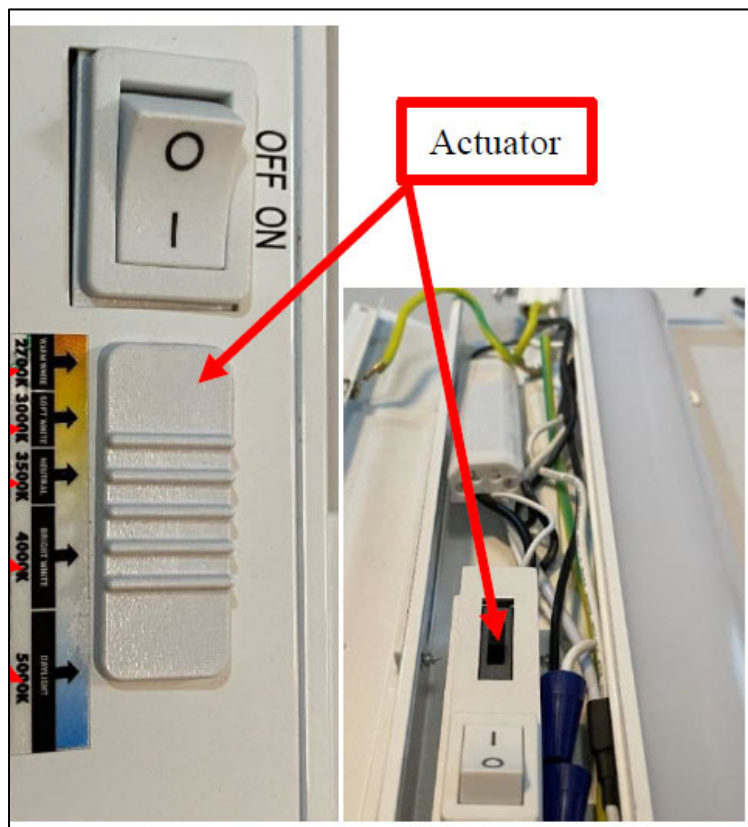
(Krames Report, Appendix D-1, at 110 (SKU 349-1292) (annotation in original).)



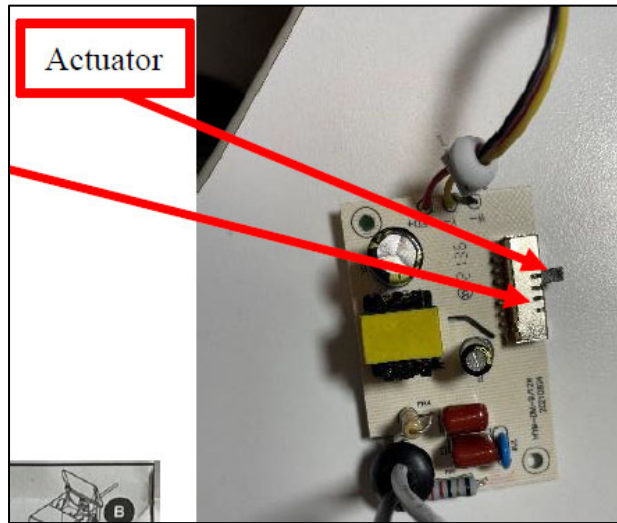
(Krames Report, Appendix D-2, at 96 (SKU 349-1348) (annotation in original).)



(Krames Report, Appendix D-3, at 103 (SKU 346-0639) (annotation in original).)



(Krames Report, Appendix D-4, at 62 (SKU 346-7258) (annotation in original).)



(Krames Report, Appendix D-5, at 88 (SKU 349-2101) (annotation in original).)

142. Thus, the Accused Products do not practice element 13[c] of claim 13 of the '336 Patent.

10. The Accused Products Do Not Practice Every Limitation of Claim 15

143. Claim 15 of the '336 Patent recites: "The switch of claim 13, wherein each position is discrete within the range of positions."

144. Claim 15, as a result of its dependence on independent claim 13, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 15, at least for its inclusion of claim elements 13[p], 13[b], and 13[c], which as I discussed above, are not practiced by the Accused Products.

11. The Accused Products Do Not Practice Every Limitation of Claim 16

145. Claim 16 of the '336 Patent recites: "The switch of claim 15, wherein the range of positions comprises a first position, a second position, a third position, a fourth position, and a fifth position."

146. Claim 16, as a result of its dependence on independent claim 13, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 16, at least for its inclusion of claim elements 13[p], 13[b], and 13[c], which as I discussed above, are not practiced by the Accused Products.

12. The Accused Products Do Not Practice Every Limitation of Claim 19

147. Claim 19 of the '336 Patent recites: "The switch of claim 13, wherein the body is configured to be disposed within a junction box."

148. Claim 19, as a result of its dependence on independent claim 13, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 19, at least for its inclusion of claim elements 13[p], 13[b], and 13[c], which as I discussed above, are not practiced by the Accused Products.

B. The Accused Products Do Not Practice Every Limitation of the Asserted Claims of the '506 Patent

149. I understand that Signify asserts claims 1-5, 7, 14, and 15 of the '506 Patent, which I have reproduced below:

1. [p] A cove lighting apparatus for an architectural surface, comprising:
 - [a] a cove member configured to fit within a gap defined by the architectural surface and comprising an interior surface that is recessed from the architectural surface; and
 - [b] at least one LED-based light source associated with the cove member for irradiating at least a portion of the interior surface with visible light perceivable by a viewer via the gap defined in the architectural surface,
 - [c] wherein the cove lighting apparatus is configured such that the at least one LED-based light source is concealed from the viewer.
2. The apparatus of claim 1, wherein the cove member includes a channel portion, and wherein: the at least one LED-based light source is coupled to the channel portion and positioned so as to irradiate at least the portion of the interior surface of the cove member with the visible light.

3. The apparatus of claim 2, further comprising a blocking member for concealing the at least one light LED-based source from the viewer.
4. The apparatus of claim 1, wherein the at least a portion the interior surface of the cove member comprises an essentially white matte surface configured to reflect and diffuse light.
5. The apparatus of claim 4, wherein the at least one LED-based light source is positioned with respect to the cove member such that the visible light is perceivable as a light surface that is essentially flush with the architectural surface.
7. The apparatus of claim 1, wherein the visible light includes essentially white light.
14. The apparatus of claim 1, wherein the visible light is perceived by the viewer as substantially uniform filling the gap in the architectural surface.
15. [p] A method for providing architectural illumination, comprising:
 - [a] forming a gap in an architectural surface;
 - [b] disposing a cove member in the gap defined by the architectural surface, the cove member comprising an interior surface that is recessed from the architectural surface;
 - [c] generating visible light by at least one light LED-based source; and
 - [d] irradiating at least a portion of the interior surface with visible light such that the visible light is perceivable by a viewer via the gap as a light surface that is essentially flush with the architectural surface.

150. I have been asked to consider whether the Accused Products infringe claims 1-5, 7, 14, and 15 of the '506 Patent. It is my opinion that the Accused Products do not infringe these Asserted Claims. Specifically:

- a) Signify has failed to establish that the interior surface of the cove member of the Accused Products is recessed from the architectural surface (limitations 1[a] and 15[b]); and
- b) Signify has failed to establish that any visible light from the LED-based light source is perceived by the viewer via the gap defined in the architectural surface (limitations 1[b] and 15[d]).

151. In the following sections, I provide my opinions as to why the Accused Products do not infringe the Asserted Claims of the '506 Patent and discuss in detail the reasons and evidence supporting my opinions.

1. The Accused Products Do Not Practice Every Limitation of Claim 1

152. Claim 1 of the '506 Patent contains four different limitations, including the preamble. After comparing the Accused Products to each and every limitation of claim 1, it is my opinion that the Accused Products do not practice claim 1 as they fail to satisfy multiple limitations. Specifically, the Accused Products do not practice at least limitations 1[a] and 1[b].

a. The Accused Products Do Not Practice Limitation 1[a]

153. Element 1[a] of claim 1 of the '506 Patent recites: “a cove member configured to fit within a gap defined by the architectural surface and comprising an interior surface that is recessed from the architectural surface.”

154. The '506 Patent is generally directed to a “cove lighting apparatus” that provides indirect lighting through the combination of a cove, or recess, and a concealed light source. Dr. Krames, however, attempts to read the claims of the '506 Patent onto various downlight products. Yet the '506 Patent is quite clear regarding its concept of cove lighting and a “cove member”:

The cove member may be flat, concave, or convex, and may be shaped as a semi-sphere having a first portion set back from the wall and an edge portion flush with a wall surface 210. In certain embodiments of the present invention mentioned above where the gap 230 is formed by removing a portion of one or more drywall sheets arranged on a standard stud-based construction frame 220, *the cove member may extend into a space behind the wall* up to 1”-4” from the wall surface, for example, to a depth of about 3.5”.

('506 Patent at 7:66-8:7 (emphasis added).)

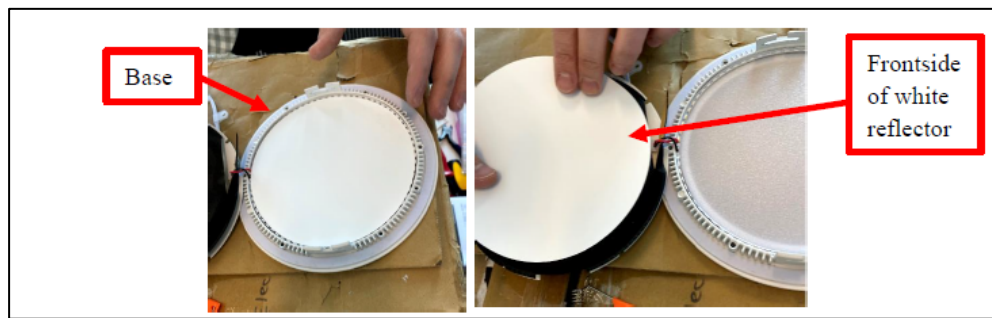
155. The '506 Patent goes on to state that “[w]ith recessed lighting, the majority of a lighting fixture is disposed substantially behind or recessed into an architectural surface or feature,

such as a ceiling, wall, or soffit.” (’506 Patent at 1:44-47.) Thus, the theme throughout the ’506 Patent is the formation of a space *behind* an architectural surface (such as the ceiling) into which LED light is injected. The ’506 Patent repeatedly emphasizes that the reflection of light from the interior surface of the cove member is intended to give the appearance to an observer of a volume “filled” uniformly with light.

156. The characteristics of cove-lighting as described in the ’506 Patent stand in contrast to LED “downlights” installed, for example, in a ceiling. In contrast to the ’506 Patent’s light fixture, the “majority” of which is “disposed substantially behind” the ceiling, LED downlights are exceptionally thin and designed to fit within the ceiling drywall itself. Consider, for example, one of the Accused Products—the SKU 349-2101 downlight. Inspection of the luminaire housing (package) shows it to have a circular “lip” designed to be in contact with the interior surface of the ceiling drywall, and to serve the purpose of concealing the roughly circular hole that was cut into the ceiling. After the lip, the depth of the luminaire is only 3/8”—less than the 1/2” thickness of conventional drywall. The lamp housing thus does not even extend to the rear face (backside) of the ceiling drywall. Including the lip thickness in the luminaire housing depth gives a total depth of only 1/2”, which is precisely the thickness of normal drywall. Such a lamp differs fundamentally from the cove-lighting described in the ’506 Patent.

157. For each of the accused “primary” and “exemplary” product SKUs, Signify identifies what it refers to as the “fixture base” of the lighting product as the claimed “cove member” and the “frontside of white reflector” as the claimed “interior surface” of the cove member.

For example, SKU 349-1353 includes a cove member (e.g., the fixture base) that is inserted into a mounting hole cut into a ceiling, the cove member including an interior surface (e.g., frontside of white reflector) that is recessed from the ceiling.



(Krames Report, Appendix C-1, at 38 (highlighting added, annotations in original).)

SKU 349-1292 includes a cove member configured to fit within a gap defined by the architectural surface and comprising an interior surface that is recessed from the architectural surface and comprising an interior surface that is recessed from the architectural surface.

For example, SKU 349-1292 includes a **cove member (e.g., the fixture base)** that is inserted into a mounting hole cut into a ceiling, the cove member including an **interior surface (e.g., frontside of white reflector)** that is recessed from the ceiling.

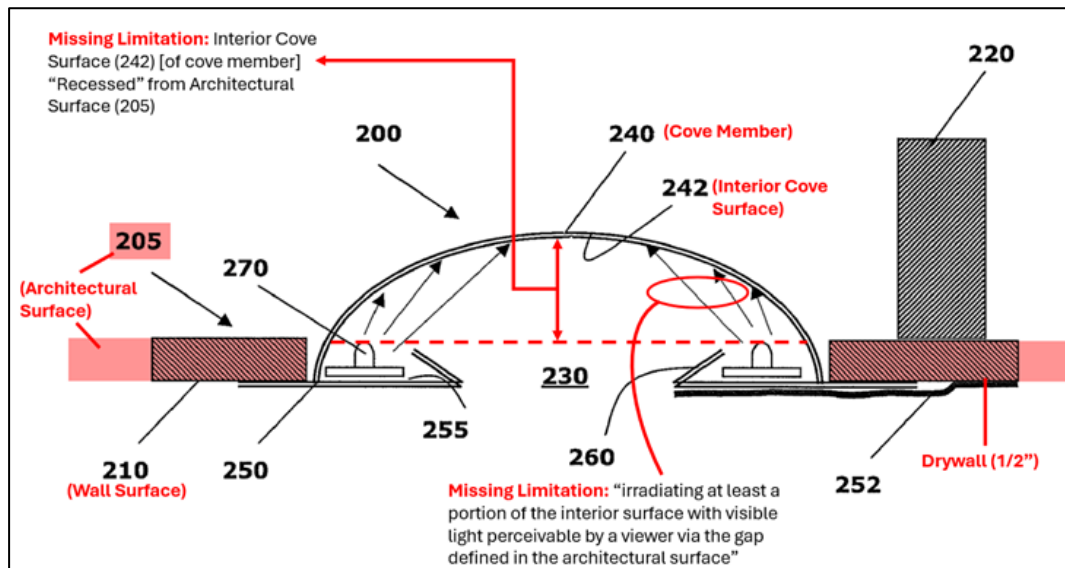


(Krames Report, Appendix C-2, at 34-37 (highlighting added, annotations in original).)

158. Thus according to Dr. Krames, the “interior surface” of the “cove member” is met by the mylar reflective layer at the back of the Accused Products. Having reviewed the “primary” product SKUs Dr. Krames charted, I disagree with his conclusion that this mylar reflective layer can meet the “recessed from the architectural surface” claim limitation.

159. As the '506 Patent discloses: “a cove lighting apparatus 200 is arranged to extend into a part of an architectural surface, e.g. a wall structure 205 (i.e., recessed in the wall).” ('506 Patent at 7:31-34.) Thus the architectural surface discussed in the '506 Patent, which is the wall

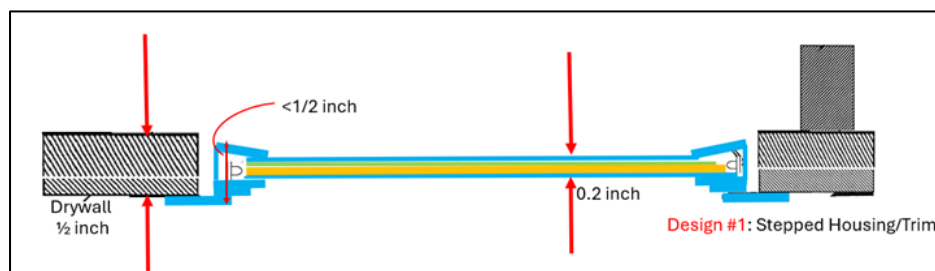
material structure (205) itself (*e.g.*, a drywall sheet), is different than the wall surface (210), which is only the front face of the wall structure.



('506 Patent Fig. 2A (annotated).)

160. Accordingly, the claimed “interior surface” of the “cove member” in Figure 2A is recessed *from the* architectural surface, situated within the wall cavity. Based upon my review of the Accused Products, when installed, they are not recessed from the entirety of the architectural surface; rather, the Accused Products sit flush with, or are only partially recessed into, the architectural surface.

161. As an example, I have prepared the following annotated drawing of one of the Accused Products, SKU 349-2102. As shown below, the lighting fixture is not recessed entirely from the architectural surface, as described and claimed in the '506 Patent.



162. While I have only included an annotated drawing with respect to SKU 349-2102, it is my opinion that Dr. Krames has failed to show how any of the Accused Products (including all of the “primary” and “exemplary” representative products) differ with respect to the manner of installation such that the lighting fixture would lie entirely recessed beyond the architectural surface. That is, Dr. Krames has failed to show that the lighting fixture of any of the Accused Products lie entirely recessed beyond the architectural surface, as recited in claim limitation 1[a].

163. For example, with respect to the “primary” Accused Products, Dr. Krames fails to show a total depth, other than retention hardware, that is less than 1/2” and, therefore, the device is not “recessed” from the architectural surface—the annotated figures that Dr. Krames included in his Appendices C-1 and C-2 illustrate that the device *does not extend at all* beyond the architectural surface. Therefore, Dr. Krames’s labeling of the mylar reflective layer as the claimed “interior surface” is incorrect because it is not “recessed” from the architectural surface as claimed. Rather, the “primary” Accused Products are designed, and indeed function, such that they are within the depth of standard drywall (typically roughly 1/2”) and do not extend into the ceiling cavity.

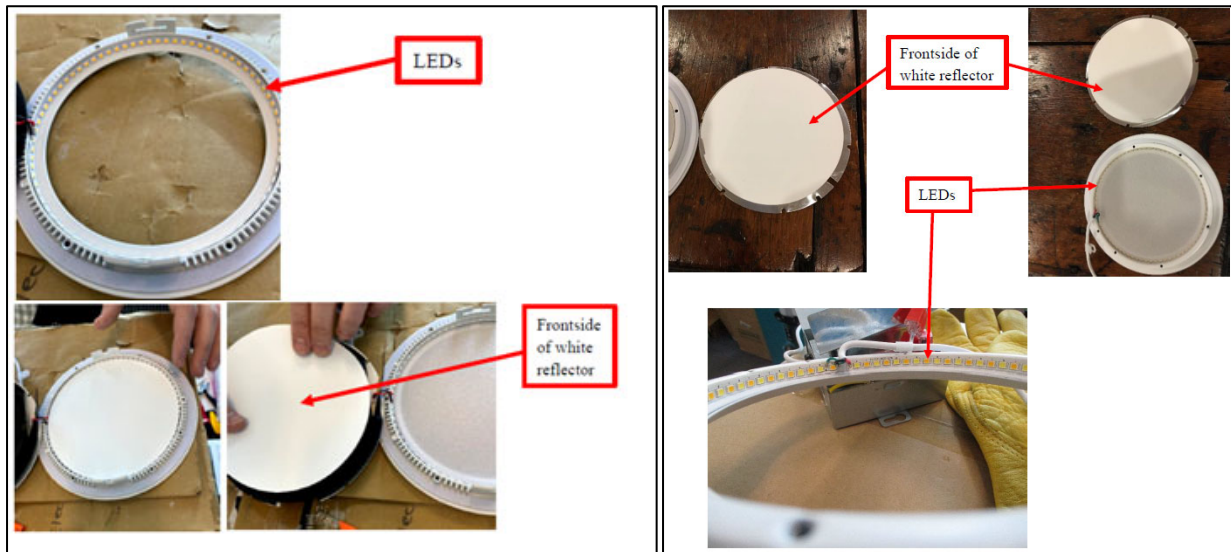
164. As Dr. Krames identifies the same or similar components on the remaining “exemplary” Accused Products as he did on the “primary” Accused Products, it is my opinion that Dr. Krames has failed to show that any of the “exemplary” Accused Products contain the claimed “interior surface” of the “cove member” that is “recessed” from the architectural surface.

165. Dr. Krames thus failed to show that the “primary” or “exemplary” Accused Products, and thus any of the Accused Products, practice element 1[a] of claim 1 of the ’506 Patent.

b. The Accused Products Do Not Practice Limitation 1[b]

166. Element 1[b] of claim 1 of the '506 Patent recites: “at least one LED-based light source associated with the cove member for irradiating at least a portion of the interior surface with visible light perceivable by a viewer via the gap defined in the architectural surface.”

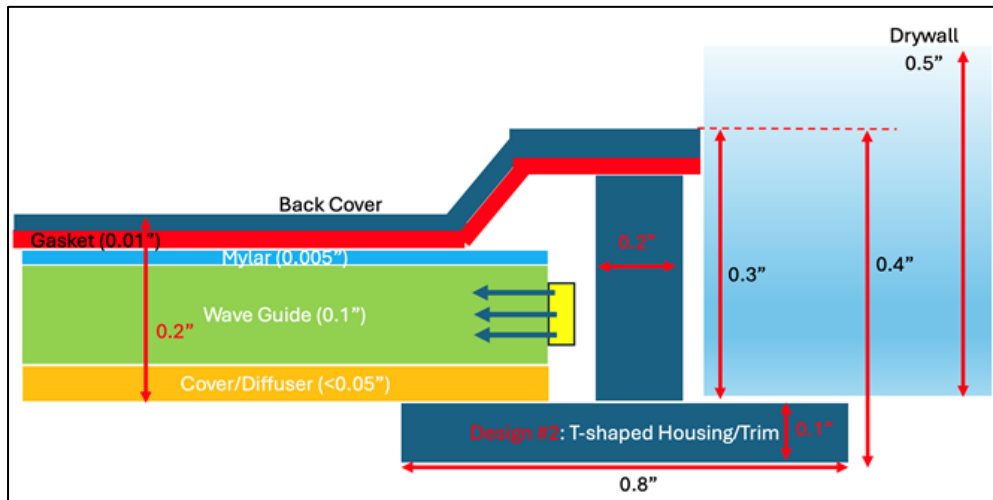
167. Dr. Krames has failed to identify *any* “gap defined in the architectural surface” through which a viewer could perceive any visible light. According to Dr. Krames, for each of the “primary” accused product SKUs, “light from these LEDs is reflected by the front of the white reflector in the downward direction and is perceivable by a viewer through the gap in the ceiling in which the SKU [349-1353/349-1292] is installed.” (Krames Report, Appendix C-1, at 44; Appendix C-2 at 45.)



(Krames Report, Appendix C-1, at 44-45; Appendix C-2, at 46 (annotations in original).)

168. In addition to failing to identify the “gap” through which the viewer perceives the light, Dr. Krames further fails to address *how* a viewer “perceives” the light reflected by the white reflector, or mylar layer, of the lighting device. Absent such analysis, I disagree with Dr. Krames’s conclusion that the viewer perceives the light through the gap. Based on the information Dr.

Krames has presented, it is my opinion that the viewer only perceives a uniform light, combining reflected and not-reflected light, from the wave guide and diffuser as illustrated below. Below is an annotated drawing of product SKU 349-1345 to illustrate this dispersion of light.



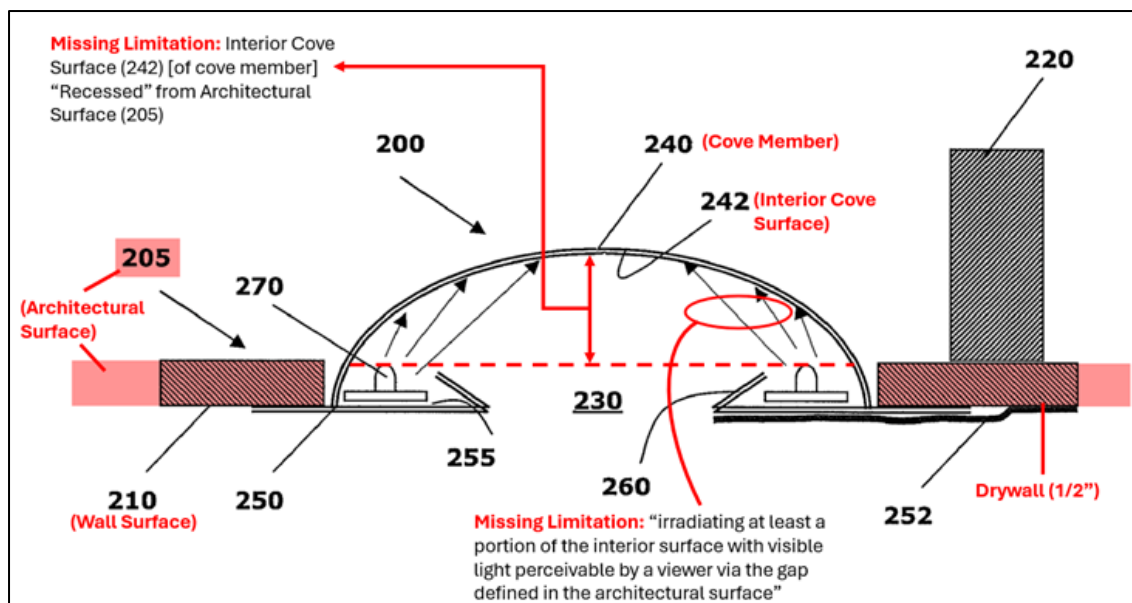
169. Although not identified specifically in the figure above, the light emitted by the LED source (shown by the yellow rectangle) reflects back and forth in a zigzag manner as it travels within the waveguide. Each time a “ray” of light impinges on the interface between the waveguide and either the mylar or the cover/diffuser, some of the light leaves the waveguide and the rest is reflected. This process occurs repeatedly as the LED light propagates through the waveguide.

170. Consequently, the Accused Products function in a very different manner than the cove luminaires described in the '506 Patent. The latter emphasizes a single reflection of light from the LED(s) by the interior surface of the cove member, which contrasts with the multiple reflections within a waveguide. Furthermore, in the '506 Patent, the LED light travels only through air and the perception of “visible light ... by a viewer via the gap” (Claim 1(b)) depends on the reflection of light from the cove member resulting in the uniform filling of the “gap” with light. The contrast with the Accused Products is stark. The Accused Products are downlights that

produce uniform light through many reflections within a waveguide. The LED light is not directed towards a “cove member” reflector, and the Accused Products have no “gap.”

171. While I have only included an annotated drawing with respect to SKU 349-1345, it is my opinion that Dr. Krames has failed to show how any of the Accused Products (including all of the “primary” and “exemplary” representative products) differ with respect to the mylar layer and subsequent dispersion of light as relevant to the asserted claim limitations.

172. As seen in the above figure, there is no “gap” in the architectural surface, because any such “gap” is filled by the waveguide and diffuser. The annotated version of Figure 2A shown below further illustrates the difference between the claimed “gap” in the architectural surface envisioned by the '506 Patent and the design (configuration) of the “primary” Accused Products.



173. As Dr. Krames identifies the same or similar components on each of the “primary” and “exemplary” Accused Products, it is my opinion that Dr. Krames has failed to show that any of the Accused Products (including each of the “primary” and “exemplary” Accused Products) contain the claimed “gap” in the interior surface through which a viewer can perceive visible light generated by the LED.

174. Dr. Krames has failed to show that the “primary” or “exemplary” Accused Products, and thus any of the Accused Products, practice element 1[b] of claim 1 of the ’506 Patent.

2. The Accused Products Do Not Practice Every Limitation of Claim 2

175. Claim 2 of the ’506 Patent recites: “The apparatus of claim 1, wherein the cove member includes a channel portion, and wherein: the at least one LED-based light source is coupled to the channel portion and positioned so as to irradiate at least the portion of the interior surface of the cove member with the visible light.”

176. Claim 2, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 2, at least for its inclusion of claim elements 1[a] and 1[b], which as I discussed above, is not practiced by the Accused Products.

3. The Accused Products Do Not Practice Every Limitation of Claim 3

177. Claim 3 of the ’506 Patent recites: “The apparatus of claim 2, further comprising a blocking member for concealing the at least one light LED-based source from the viewer.”

178. Claim 3, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 3, at least for its inclusion of claim elements 1[a] and 1[b], which as I discussed above, is not practiced by the Accused Products.

4. The Accused Products Do Not Practice Every Limitation of Claim 4

179. Claim 4 of the ’506 Patent recites: “The apparatus of claim 1, wherein the at least a portion the interior surface of the cove member comprises an essentially white matte surface configured to reflect and diffuse light.”

180. Claim 4, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 4, at least for its inclusion of claim elements 1[a] and 1[b], which as I discussed above, is not practiced by the Accused Products.

5. The Accused Products Do Not Practice Every Limitation of Claim 5

181. Claim 5 of the '506 Patent recites: "The apparatus of claim 4, wherein the at least one LED-based light source is positioned with respect to the cove member such that the visible light is perceivable as a light surface that is essentially flush with the architectural surface."

182. Claim 5, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 5, at least for its inclusion of claim elements 1[a] and 1[b], which as I discussed above, is not practiced by the Accused Products.

6. The Accused Products Do Not Practice Every Limitation of Claim 7

183. Claim 7 of the '506 Patent recites: "The apparatus of claim 1, wherein the visible light includes essentially white light."

184. Claim 7, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 7, at least for its inclusion of claim elements 1[a] and 1[b], which as I discussed above, is not practiced by the Accused Products.

7. The Accused Products Do Not Practice Every Limitation of Claim 14

185. Claim 14 of the '506 Patent recites: "The apparatus of claim 1, wherein the visible light is perceived by the viewer as substantially uniform filling the gap in the architectural surface."

186. Claim 14, as a result of its dependence on independent claim 1, necessarily includes each of the limitations recited therein. Accordingly, the Accused Products do not practice claim 14, at least for its inclusion of claim elements 1[a] and 1[b], which as I discussed above, is not practiced by the Accused Products.

8. The Accused Products Do Not Practice Every Limitation of Claim 15

187. Claim 15 of the '506 Patent contains five different limitations, including the preamble. After comparing the Accused Products to each and every limitation of claim 15, it is my opinion that the Accused Products do not practice claim 15 as they fail to satisfy multiple limitations. Specifically, the Accused Products do not practice at least limitations 15[b] and 15[d].

a. The Accused Products Do Not Practice Limitation 15[b]

188. Element 15[b] of claim 1 of the '506 Patent recites: “disposing a cove member in the gap defined by the architectural surface, the cove member comprising an interior surface that is recessed from the architectural surface.”

189. As I discussed above with reference to claim element 1[a], Dr. Krames has failed to show that the “primary” or “exemplary” Accused Products, and thus any of the Accused Products, contain the claimed “interior surface” of the “cove member” that is “recessed” from the architectural surface.

190. Dr. Krames has therefore similarly failed to show that the “primary” or “exemplary” Accused Products, and thus any of the Accused Products, practice element 15[b] of claim 15 of the '506 Patent.

b. The Accused Products Do Not Practice Limitation 15[d]

191. Element 15[d] of claim 1 of the '506 Patent recites: “irradiating at least a portion of the interior surface with visible light such that the visible light is perceivable by a viewer via the gap as a light surface that is essentially flush with the architectural surface.”

192. As I discussed above with reference to claim element 1[b], Dr. Krames has failed to show that the “primary” or “exemplary” Accused Products, and thus any of the Accused Products, contain the claimed “gap” in the interior surface through which a viewer can perceive visible light generated by the LED.

193. Dr. Krames has therefore similarly failed to show that the “primary” or “exemplary” Accused Products, and thus any of the Accused Products, practice element 15[d] of claim 15 of the '506 Patent.

IX. MENARD’S ACTS OF INFRINGEMENT

194. Dr. Krames provides further opinions related to the alleged direct and indirect infringement of the '336 and '506 Patents based on what he characterizes as “Menard’s exemplary acts of infringement.” (Krames Report, at ¶ 331.) I address each of Dr. Krames analyses on these points below.

A. Dr. Krames Fails to Establish Direct Infringement by Menard

195. I understand that Dr. Krames alleges Menard’s directly infringes the '336 and '506 Patents based on the following conduct: (i) selling and/or offering for sale the Accused Products in its physical retail stores and via its public website; and (ii) using the Accused Products at its physical retail stores, including in its “Expanded Lighting Showroom[s].” (Krames Report, at ¶¶ 332-333.) The basis for Dr. Krames opinions are those expressed in the appendices to his report, namely Appendices C-1 and C-2, and D-1 through D-5. (Krames Report, at ¶ 336.) For the reasons

I discussed above, it is my opinion that the Accused Products do not meet every limitation of the Asserted Claims of the '336 and '506 Patents. Accordingly, it is my opinion that the actions of Menard with respect to the Accused Products (selling and offering for sale on its website and use in its physical retail stores) do not constitute acts of direct infringement as such products fail to practice each and every limitation of the Asserted Claims of the '336 and '506 Patents.

B. Dr. Krames Fails to Establish Indirect Infringement by Menard

196. Dr. Krames purports to analyze two different types of indirect infringement by Menard: induced infringement and contributory infringement. It is my opinion that Dr. Krames has failed to establish either category of indirect infringement.

1. Dr. Krames Fails to Establish Induced Infringement by Menard

197. I understand that an alleged infringer is only liable for induced infringement if the acts carried out by another directly infringe the Asserted Claims. As I explained in detail above, it is my opinion that none of the Accused Products infringe any Asserted Claims of the '336 or '506 Patents. Therefore, it is my understanding that there can be no induced infringement by any of the Accused Products.

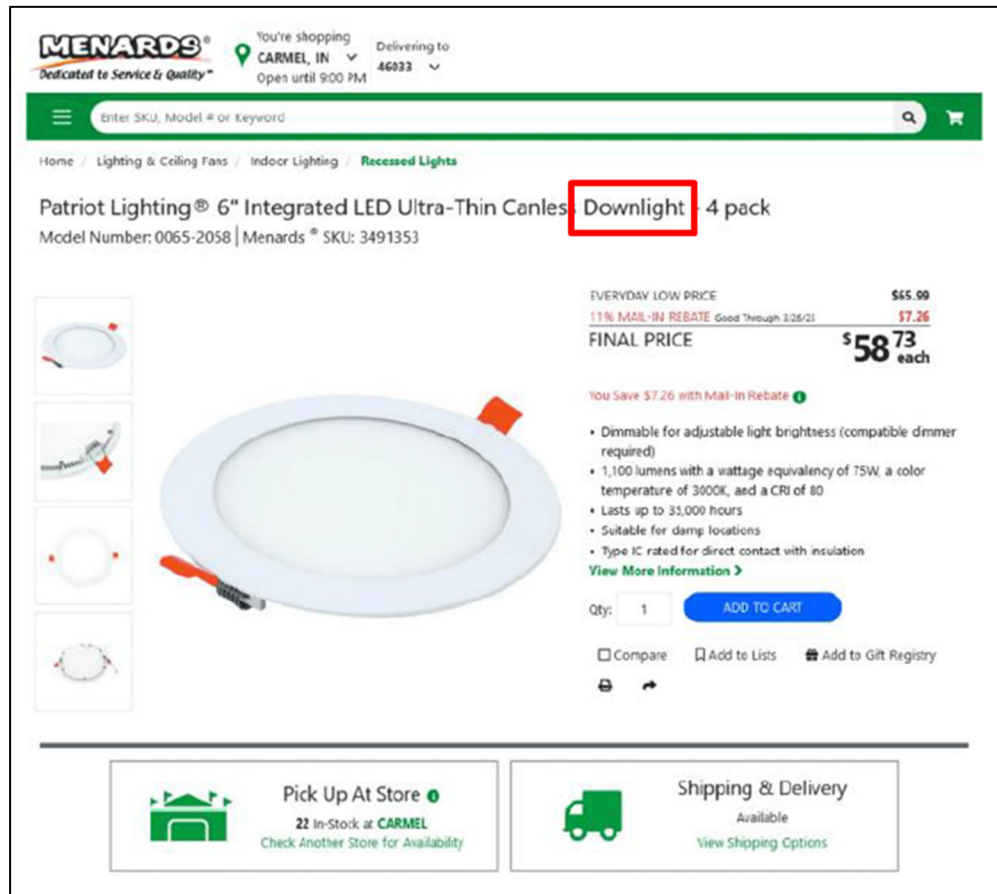
198. Regardless, I will address Dr. Krames specific allegations of induced infringement by Menard. I understand that Dr. Krames alleges that the “entities using, supplying or importing Menard’s Accused Products within the United States include Menard’s suppliers, Menard’s customers and the end-users of Menard’s Accused Products in the United States.” (Krames Report, at ¶ 339.) Thus according to Dr. Krames, “[t]hese entities directly infringe the Asserted Claims by using, supplying or importing within the United States, the Accused Products.” (Krames Report, at ¶ 339.) Dr. Krames further alleges that Menard has had “actual knowledge of the existence of the ... '506 Patent” since the filing of the complaint in this case (August 12, 2022),

and “actual knowledge of the existence of the ’336 Patent ... since at least February 8, 2021.” (Krames Report, at ¶ 340.) As I stated above, it is my opinion that the Accused Products do not infringe the Asserted Claims of the ’506 and ’336 Patents.

199. Dr. Krames then moves on to his specific allegations of induced infringement. According to Dr. Krames, as part of Menard’s efforts to offer for sale, and sell, the Accused products “both through its physical retail locations ... or via its public website to customers and end users,” Menard “provides to its customers and end users within the United States (both on its public website and withing [sic] its product packaging) instructions that encourage use of the Accused Products, where such use constitutes patent infringement.” (Krames Report, at ¶ 343.) I thus understand Dr. Krames induced infringement theories to be based on the advertisement on Menard’s website of the Accused Products and inclusion of instruction manuals within the product packing of the Accused Products that encourage the customers/end users to utilize the Accused Products in an allegedly infringing manner. I understand that Signify, as the party alleging infringement, bears the burden of proving induced infringement. It is my opinion that Dr. Krames’s analysis falls short of doing so.

200. Dr. Krames attempts to rely on evidence from Menard’s website that he contends “encourages use of the product” by way of providing “Technical Specifications” and “Installation Instructions” which allegedly “further encourage use of the product by customers and end users.” (Krames Report, at ¶ 344.) The particular product that Dr. Krames focuses his analysis on is 349-1353, which is only accused of infringing the ’506 Patent; not the ’336 Patent. Having reviewed the evidence Dr. Krames relies on, it is my opinion that such website advertisements and installation instructions fail to demonstrate that Menard sought to induce end users or customers into infringing the ’506 Patent. As I discussed above, the ’506 Patent is directed to a unique

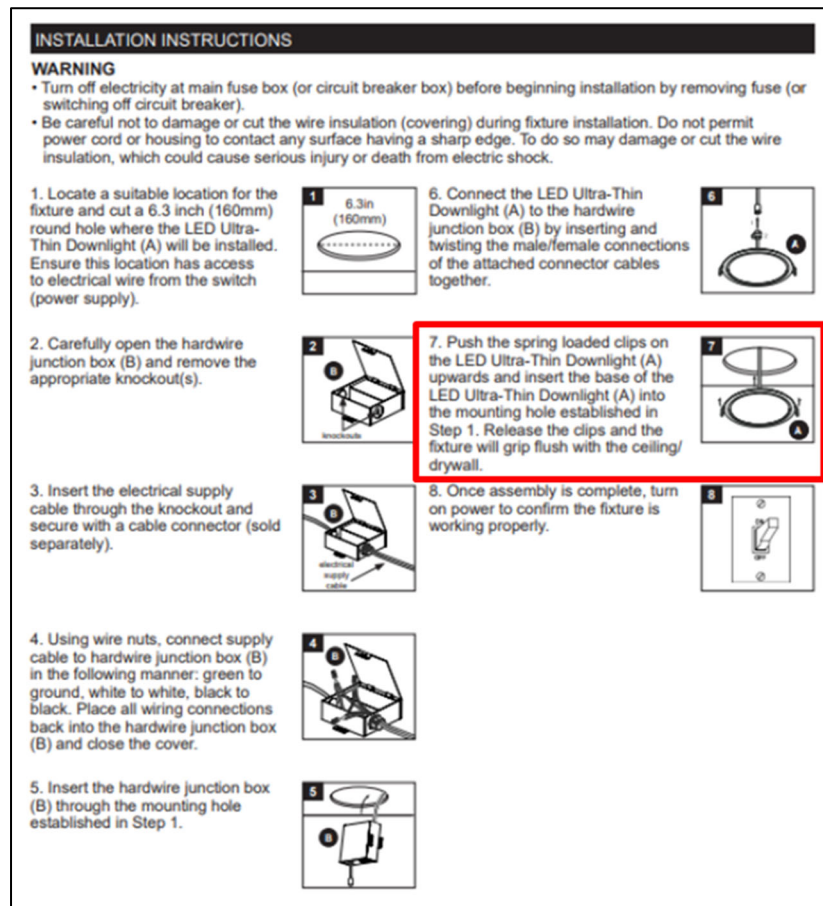
implementation of cove lighting apparatuses. The product SKU that Dr. Krames analyses, 349-1353, is not such a “cove” light. Rather, this product is a standard downlight, as demonstrated by the very screen capture of the Menard website that Dr. Krames reproduced.



(Krames Report, at ¶ 344 (annotated); <https://www.menards.com/main/lighting-ceiling-fans/indoor-lighting/recessedlights/patriotlighting-reg-6-integrated-led-ultra-thin-round-downlight-4-pack/0065-2058/p1611561098568997-c-7499.htm>; MEN000071-72.)

201. Nowhere in the Menard’s website advertisement or product packaging of product SKU 349-1353 does Menard encourage the use of this downlight apparatus as a “cove” lighting apparatus consistent with the claims of the ’506 Patent. In fact, the installation instructions that Dr. Krames cites to show that product SKU 349-1353 is not meant to be mounted such that it is

“recessed” into the architectural surface, as required by the claims of the ’506 Patent. Instead, the installation instructions, which are included both on the website and with the product packaging, explicitly indicate that the downlight should be mounted via the releasable clips such that the lighting fixture is gripped “flush with the ceiling/drywall.”



(Krames Report, at ¶¶ 344, 346;

https://cdn.menardc.com/main/items/media/AMERI147/Install_Instruct/IM_6inRound_LEDWaf
 erLight_349-1353.pdf; MEN0000212-213; SIGNIFYMNRD0010562 -
 SIGNIFYMNRD0010565.)

202. Contrary to Dr. Krames' opinion, the information he cites from Menard's website and product packaging fails to establish that Menard "encourage use of the product by customers and end users" in a manner that infringes the claims of the '506 Patent.

203. Additionally, Dr. Krames only specifically cites to product SKU 349-1353, concluding that "the same is true for the other Accused Products that Menard currently makes available through its public website." (Krames Report, at ¶ 344.) As I discussed above, it is my opinion that Dr. Krames has failed to demonstrate that any of the "primary" or "exemplary" Accused Products are representative of the remaining Accused Products. Accordingly, as Dr. Krames has failed to analyze any of the remaining accused product SKUs, it is my opinion that he has failed to demonstrate that the Menard website or product packaging induced infringement of any remaining Accused Products.

204. Dr. Krames cites to the instruction manual, packaging, and Menard's website for one SKU accused of infringing the '336 Patent (SKU 349-1348). Dr. Krames alleges that Menard, through these materials "advertises and encourages use of its CCT selectability via a CCT switch." (Krames Report, at ¶ 347). Dr. Krames is correct that the materials identify that SKU 349-1348 identifies the product as having multiple CCT outputs, but Dr. Krames does not identify any alleged encouragement or explain at all how this would apply to any other '336 Patent Accused Products.

2. Dr. Krames Fails to Establish Contributory Infringement by Menard

205. I understand that where a patentee alleges contributory infringement, the alleged infringer is only liable where the acts carried out by another are found to directly infringe the Asserted Claims. As I discussed above, it is my opinion that none of the Accused Products infringe any of the Asserted Claims of the '336 or '506 Patents, including method claim 15 of the '506

Patent. It is thus my opinion that there can be no contributory infringement of any Asserted Claims of the '336 or '506 Patents.

206. Dr. Krames specifically alleges that Menard contributorily infringes method claim 15 of the '506 Patent by “instruct[ing] customers and other end users ... to perform the steps of method claim 15 in order to install and use the product as designed, including via Installation Instructions made available on Menard’s public website and included within product packaging.” (Krames Report, at ¶ 357.) As I discussed above, however, the installation instructions that Dr. Krames cites to show that product SKU 349-1353 is not meant to be mounted such that it is “recessed” into the architectural surface, as required by the claims of the '506 Patent. Instead, the installation instructions, which are included both on the website and with the product packaging, explicitly indicate that the downlight should be mounted via the releasable clips such that the lighting fixture is gripped “flush with the ceiling/drywall.” I thus disagree with Dr. Krames characterization that “there is no disclosed use (in the Installation Instructions or in any other information produced in this litigation) of another use that would not infringe.” (Krames Report, at ¶ 358.)

207. Contrary to Dr. Krames’ opinion, the information he cites from Menard’s website and product packaging fails to establish that Menard indirectly infringe method claim 15 of the '506 Patent through contributory infringement.

208. Additionally, much the same as for his induced infringement analysis, Dr. Krames only specifically cites to product SKU 349-1353, concluding that the “same is true for all '506 Patent Accused Product [sic] that are identified as practicing claim 15.” (Krames Report, at ¶ 357.) As I discussed above, it is my opinion that Dr. Krames has failed to demonstrate that any of the “primary” or “exemplary” Accused Products are representative of the remaining Accused

Products. Accordingly, as Dr. Krames has failed to analyze any of the remaining accused product SKUs, it is my opinion that he has failed to demonstrate that the Menard website or product packaging contributorily infringe any remaining Accused Products.

X. SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS

209. Finally, Dr. Krames addresses what he alleges to be certain secondary considerations of nonobviousness with respect to the '336 Patent. (Krames Report, at ¶¶ 361-386.) It is my understanding that secondary considerations of nonobviousness, sometimes also referred to as objective indicia of nonobviousness, can be introduced to rebut a showing that patent claims are obvious over the prior art. As I discussed in my opening report addressing the invalidity of the '336 and '506 Patents, I understand that there must be an association or “nexus” demonstrated between the claimed elements and the secondary considerations of nonobviousness.

210. While Dr. Krames does discuss certain information he reviewed regarding the '506 Patent, he only offers opinions regarding the alleged secondary considerations of nonobviousness with respect to the '336 Patent. I thus understand that Dr. Krames does not argue that any alleged secondary considerations of nonobviousness exist so as to overcome any potential finding of obviousness in view of the prior art with respect to the '506 Patent. I will therefore only respond to those opinions that Dr. Krames actually presented, which address alleged secondary considerations of nonobviousness with respect to the '336 Patent.⁴

211. I presented my opinions with respect to the invalidity of the '336 Patent in my opening expert report served on April 29, 2024, which included my opinions with regards to the obviousness of the Asserted Claims of the '336 Patent. Despite not having even seen these

⁴ To the extent Dr. Krames attempts to offer further opinions regarding any alleged secondary considerations of nonobviousness with respect to the '506 Patent, I reserve my right to respond to such later presented opinions.

opinions yet at the time of preparing his report, it appears that Dr. Krames nonetheless decided to offer his opinions regarding such alleged secondary considerations of nonobviousness. I will thus respond to Dr. Krames opinions regarding alleged secondary considerations of nonobviousness accordingly.

212. The first alleged secondary consideration of nonobviousness that Dr. Krames discusses is apparent “significant praise and commercial success” for Signify’s inventors and their LED lighting products. (Krames Report, at ¶¶ 364-366.) But the only evidence that Dr. Krames identifies for such alleged “praise and commercial success” are Signify sales figures for all of its products, as well as pointing to various user guides and product packaging of the *Accused Products*. Dr. Krames never ties the Signify sales figures to any particular limitations of the Asserted Claims, nor does he discuss how any particular features of the Accused Products demonstrate any particular benefits driving their respective sales. It is therefore my opinion that by failing to tie the Signify sales figures or the apparent benefits of the Accused Products to the particular claim limitations of the Asserted Claims, such purported evidence fails to substantiate the secondary considerations of significant praise or commercial success.

213. Next, Dr. Krames attempts to establish industry praise by identifying the number of citations by other patents and patent applications to each of the ’336 and ’506 Patents. (Krames Report, at ¶ 367.) Again though, Dr. Krames fails to link any of these patent citations to the particular features of the Asserted Claims. It is my understanding that a patent or patent application may cite to another patent for a host of different reasons, including certain disclosures in the specification that are not recited in the claims. It is therefore my opinion that by failing to tie the citations to the asserted patents to particular claim limitations of the Asserted Claims, such purported evidence fails to substantiate the secondary consideration of industry praise.

214. Dr. Krames then attempts to establish the secondary considerations of the asserted patents solving a “long felt but unresolved need in the industry, failure of others, teaching away and provid[ing] unexpected results.” (Krames Report, at ¶ 368.) For these alleged secondary considerations, Dr. Krames simply points to: (i) the file histories of the asserted patents; and (ii) the specifications of the asserted patents themselves. Yet again, Dr. Krames fails to tie this purported evidence to any particular limitations of the Asserted Claims. It is therefore my opinion that by failing to link such evidence to the particular claim limitations of the Asserted Claims, such purported evidence fails to substantiate the secondary considerations of solving a long felt but unmet need, the failure of others, or teaching away and providing unexpected results.

215. In a final attempt to establish secondary considerations of nonobviousness, specifically for the '336 Patent, Dr. Krames purports to analyze the commercial success, award, praise by others, and long-felt but unresolved needs. (Krames Report, at ¶¶ 369-385.) According to Dr. Krames, the commercial success of certain Eaton/Cooper Lighting products that were later acquired by Signify demonstrate nonobviousness of the '336 Patent. (Krames Report, at ¶ 369.) Dr. Krames identifies the Halo Commercial PR8 family of products containing the SeleCCTable™ technology as purportedly embodying the CCT switch invention of claim 13. (Krames Report, at ¶ 370.) As an initial matter, as I stated in my opening report, to the extent the PR8 products actually blend the two CCTs as Dr. Krames alleges, then the products are using a different circuitry than that shown in Figure 2 of the '336 Patent. Further, as claim 13 of the '336 Patent is only entitled to a priority date of June 21, 2018, to the extent the PR8 products embody claim 13, then such products would have anticipated such a claim as, according to Signify, such products were first introduced to the market and sold in January 2017.

216. Dr. Krames alleges that the PR8 products are “the same, or substantially the same, as the embodiments illustrated in Figures 1I, 1J and 1K of the ’336 Patent (and related disclosures).” (Krames Report, at ¶ 371.) The primary evidence that Dr. Krames alleges for such similarity is the location and operation (collectively referred to by Dr. Krames as the “configuration”) of the DIP switch. (Krames Report, at ¶¶ 372-374, 380-384.) According to Dr. Krames, before introduction of the PR8 products in January 2017, the industry standard was to use different singular pre-set CCT values of the same model having different pre-set CCT values. (Krames Report, at ¶ 375.) This apparently led to difficulties securing available shelf space and leading customers to purchase the correct SKU that happened to be set to the incorrect pre-set CCT value. (Krames Report, at ¶ 375.) Dr. Krames thus concludes that the PR8 products were “the first product to provide a luminaire or lighting device with CCT selectability via a switch,” and identifies a series of industry discussions relating to the PR8 products, as well as the products apparent “logo.” (Krames Report, at ¶¶ 376-379.)

217. Despite discussing the PR8 products in more detail than the previous alleged secondary considerations, the majority of the “evidence” that Dr. Krames relies on has no relation to the commercial success or solving a long-felt but unresolved need in the industry. For each of these secondary considerations, Dr. Krames fails to establish how any of the claimed features of the Asserted Claims of the ’336 Patent correspond to the alleged secondary consideration. Nor has Dr. Krames substantiated any considerable commercial success of the PR8 products or identified any industry literature or other evidence supporting his claim that the need for such a selectable switch long existed but was not able to be addressed by previous technologies.

218. The only evidence that Dr. Krames identifies that even relates to potential secondary considerations of nonobviousness is his reliance on the various press releases discussing

the PR8 products. (Krames Report, at ¶¶ 377-378.) But just as he did for previous allegations of secondary considerations of nonobviousness, Dr. Krames fails to tie this purported evidence to any particular limitations of the Asserted Claims. Finally, Dr. Krames's citation to the industry awards are likewise unavailing. Dr. Krames has not shown that these products embody the claims of the '336 Patent, and these are irrelevant in view of the fact that the simple technology allegedly claimed in the '336 Patent was known for decades, as I have described in this report and in my Opening Report.

219. It is therefore my opinion that by failing to link such evidence to the particular claim limitations of the Asserted Claims, such purported evidence fails to substantiate the secondary consideration of industry praise.

XI. CONCLUSION

220. This Expert Report expresses the opinions that I currently hold with respect to this matter. To the extent that further information becomes available that would affect my analysis contained in this report, I may provide such supplemental insights. I will supplement this report, if requested to do so by counsel, to rely on any such additional information, including but not limited to documents and testimony that come to my attention between now and trial, especially regarding any opinions expressed by Signify's experts. Nevertheless, I believe that the information that has been made available to me and which I have reviewed to date supports the opinions expressed in this report.

221. I further understand that I may be called upon to provide expert analysis and opinions in rebuttal to any arguments or evidence brought forward by Signify in this litigation. To the extent such additional information is provided, I understand I may be asked to address such information and, if appropriate, submit a supplement to this Expert Report.

222. The Accused Products do not infringe the '336 Patent because the Accused Products do not meet the limitations of the Asserted Claims.

223. The Accused Products do not infringe the '506 Patent because the Accused Products do not meet the limitations of the Asserted Claims.

224. Dr. Krames has failed to establish that Menard's acts of advertising the Accused Products on its public website or selling, offering for sale, and/or displaying the Accused Products in its physical retail store locations constitute direct or indirect infringement of the Asserted Claims.

225. Dr. Krames has failed to establish that any claim features of the Asserted Claims are responsible for establishing secondary considerations of nonobviousness sufficient to overcome any finding that the claims are obvious over the prior art.

226. During my testimony at trial, hearing, or deposition, I expect to rely upon exhibits or visual aids prepared to depict and explain the information contained in this Expert Report or as rebuttal to testimony by Signify's witnesses.